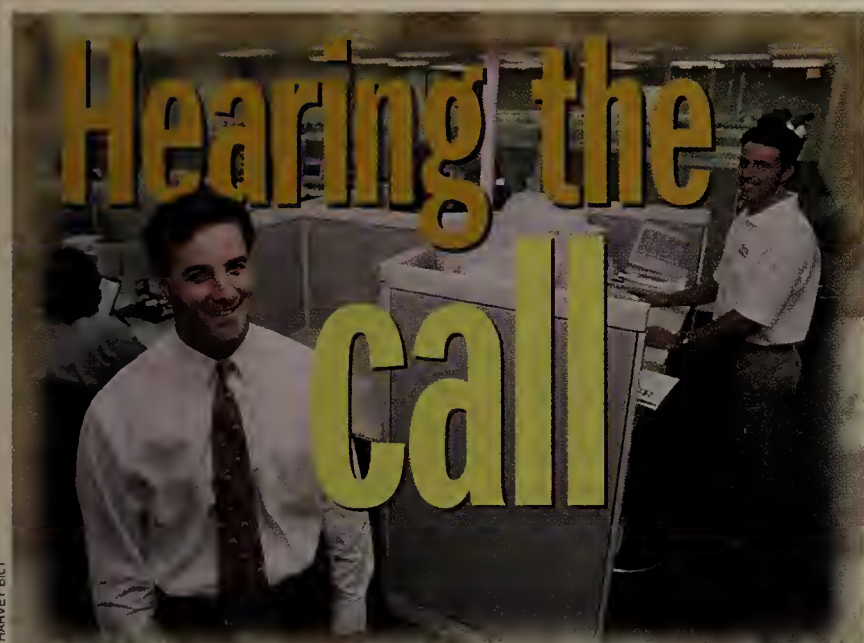
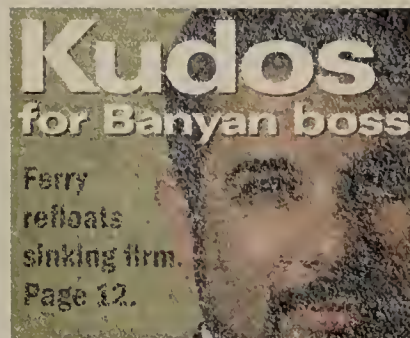


NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING



Hearing the call

Smaller companies buy in to LAN-based call center systems, but larger users are wisely waiting.

By Neal Weinberg

When Miami-based InkTel Marketing needed to build a 300-seat call center to handle additional business, it went with a LAN-based PBX that delivers voice, data and video to the desktop over a single wire. InkTel puts its cost per seat at \$9,500, which includes everything from wiring and ATM switches to the licenses for special call center applications. A comparable package from a PBX vendor would have cost \$15,000 per seat, the company says.

See Hearing the call, page 45

InkTel's Eddy Arriola (above left) says his new call center generates savings on equipment, maintenance, application development and training.

Number portability: How slow can it go?

By David Rohde
Washington, D.C.

Changing Internet service providers could mean changing your IP addresses. That may be understandable because commercial use of the Internet is still so new.

But you might think the 122-year-old telephone network would

allow you to change local carriers without changing your phone numbers. Think again.

The Federal Communications Commission's often-delayed deadline of March 31, 1998, to begin local telephone number portability, recently passed with barely a whimper.

See Portability, page 64

Cabletron CEO's bold new plan

In his third week on the job, CEO Benson pursues acquisitions, hones strategies.

By Robin Schreier Hohman
Rochester, N.H.

Craig Benson isn't wasting any time.

The newly self-appointed CEO of Cabletron Systems, Inc. will shake up the network world this week when he reveals a fresh focus for the company, one that will forego the end-to-end strategies touted by its competitors. Instead, Benson will play up Cabletron's key strengths: switching and network management.

Benson's first move is expected to be the acquisition of NetVantage, Inc., a company that makes workgroup Ethernet switches and sells them under OEM agreements to about two dozen well-known network companies. Network World Fusion posted the NetVantage news last Wednesday.

See Cabletron, page 65

BENSON'S MISSION

- Acquire companies such as NetVantage to gain low-cost products
- Reshape management team
- Home in on key parts of the network market such as switching and management
- Reiterate and fine-tune strategies established by former CEO Don Reed
- Regain confidence of customer base

Get more online:

- Our online forum on Cabletron's future
- A look at recent Cabletron acquisitions
- Latest Cabletron financial and stock news

www.nwfusion.com

Interop inside

Our comprehensive planning guide is your best bet for getting the most out of next month's NetWorld+Interop 98 show in Las Vegas. **Page 38.**

Newcomer BlazeNet is hoping its integrated LAN/WAN switch will catch fire. **Page 6.**

Start-up Indus River is jumping into the crowded VPN product pool. **Page 13.**

NETWORLD+INTEROP

GTE bets on mgmt. start-up

By Jim Duffy
Cambridge, Mass.

In GTE Internetworking's battle against net-management data overload, the weapon of choice is software from a start-up.

The telecom giant is **In-Site** beta-testing Opticom, Inc.'s Executive Information Systems (EIS) to sift through

event data that Cabletron Systems, Inc.'s Spectrum management platform collects from devices scattered across GTE Internetworking's sprawling internal network.

Besides speeding problem isolation, EIS helps GTE plan net upgrades and test

See GTE, page 12

IBM crafts ultrathin client OS

By Marc Songini, John Cox
and Chris Nerney
Yorktown Heights, N.Y.

Does the world really need another operating system? When it comes to small network-enabled devices, IBM believes it does.

IBM researchers are building

an operating system aimed squarely at ultrathin clients and their servers.

If the experimental software, code-named Lava, becomes commercially available, it could drive an array of thin clients and

See Lava, page 64



g i g a

For James Cameron's "Titanic," DIGITAL AlphaServer™ systems ran nonstop for weeks, rendering what could use that kind of speed, power and reliability, there's only one way to go. With us. Find us



gigahit

digital

thousands of frames of complex visual effects—beautifully and blazingly fast. If your business
it www.digital.com/gigahit or call 1-800-DIGITAL. And get ready to win in a networked world.

poration. Image copyright of 20th Century Fox/Paramount Pictures. Image courtesy of Digital Domain, Inc., and Lightstorm Entertainment.



What if you could make your road to ATM significantly smoother

The road between Frame Relay and ATM can be rough. It can also be nearly impassable, because many network components still make you choose between the two leading standards. With the Alcatel 1100 HSS[®] multiservice WAN switch from Alcatel Data Networks, you can support either Frame Relay, ATM or both protocols simultaneously in one flexible platform. With standards-compliant and carrier-class features that let you maintain full interoperability with yesterday's systems, while paving the way to tomorrow's. Smoothly. To learn more, call **1-888-ADN-2500** or (703) 724-2878, or visit <http://www.adn.alcatel.com>.

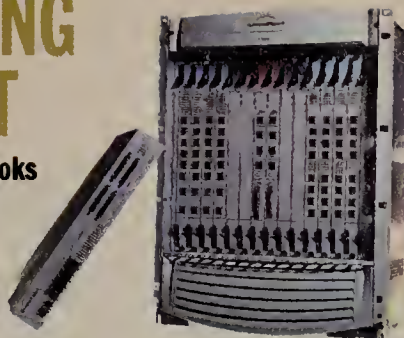


NOT KEEN ON ESCROW

MIT's Schiller tells government to take a hike on key escrow. Page 8.

SWITCHING CONTENT

ArrowPoint device looks at data type before making switching decisions. Page 17.



ELECTRONIC TAXWOMAN

The IRS's Linda Wallace survives data flood from agency move to electronic tax filing. Page 51.



NetworkWorldContents

April 13, 1998 Volume 15, Number 15

News

- 6 Start-up BlazeNet** looks to catch fire in application switch market.
- 8 The NT pricing plan** for Windows Terminal server may hurt.
- 8 Some government pilots** mandating key escrow crashing.
- 10 IBM to introduce** new services and management software.
- 10 Spam-busters** say moratorium taking a toll.
- 12 VINES-NT integration** highlights Banyan CEO William Ferry's game plan.
- 13 Indus River** reveals virtual private network plans.
- 65 Cabletron** enhances switch performance, brings down prices.
- 65 New Cabletron** software load balances traffic between switches.

Local Networks

- 17 ArrowPoint** zeroes in on server farm congestion with its new switches.
- 17 Intel ties** knot between LANdesk and enterprise management platforms.
- 18 Dave Kearns:** Protecting yourself from pirates.

Internetworks

- 23 IBM to boost** Fibre Channel support across its server line.
- 23 Netopia** adds remote client management to Timbuktu.
- 24 Kevin Tolly:** Cisco does not act like a leader.

SPECIAL FOCUS

Web-based management

Are the World Wide Web and Internet technologies really the future of network management? Page 25.

Plan ahead

Sorting out what to see and do at the immense Interop show can be a chore. We have done the hard work by pinpointing the events and activities you should attend. See what's what in our Interop planner. Page 38.



Carriers & ISPs

- 27 Cisco offers** discounts, service incentives for E-rate school program.
- 27 America Online** wants your remote access business.
- 29 Level 3** expands its reach with purchase of XCOM.
- 30 Daniel Briere and Christine Heckart:** The quality-of-service quandary.

Intranet Applications

- 31 Doing business** with the government electronically is no easy task.

- 31 Microsoft Exchange** partners angling for an edge.

- 32 Scott Bradner:** How are they going to do that?

Management Strategies

- 51 It's a taxing time** for the folks who run the IRS Web site and electronic filing system.

Opinions

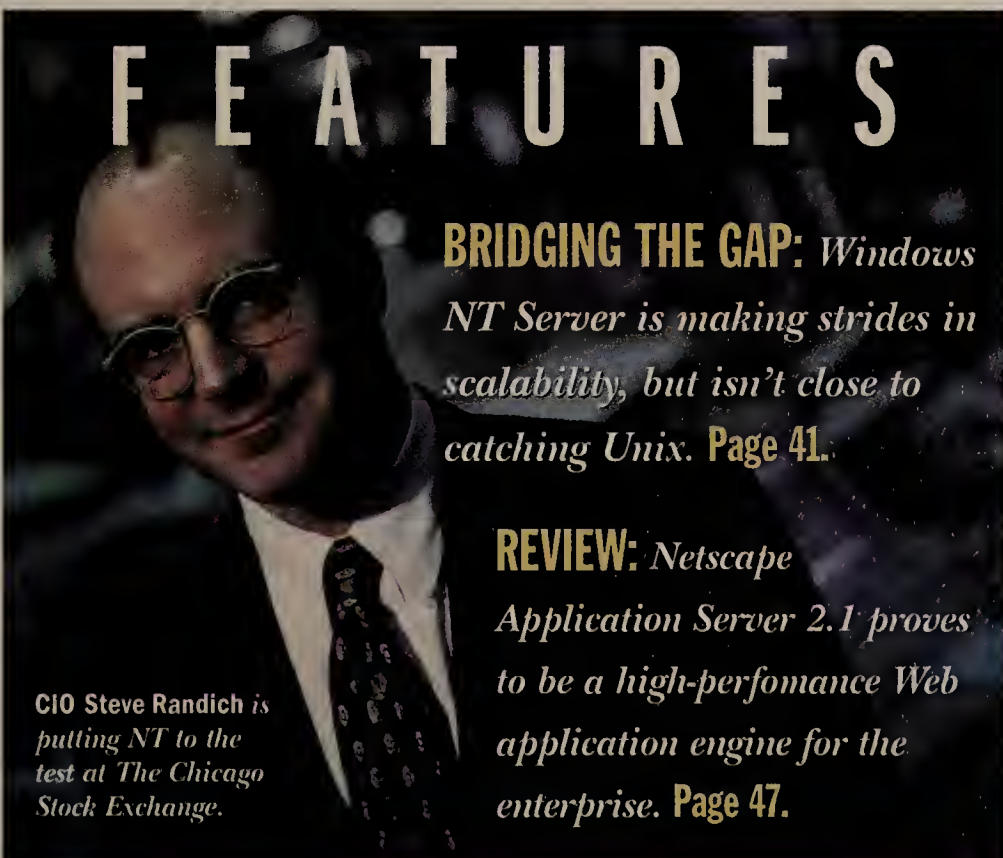
- 36 Editorial:** Forget winners and losers.
- 36 Kevin Fong:** RBOCs have to get with the data program.
- 37 Thomas Nolle:** New standard is fueling 'Net QoS buzz.
- 66 Mark Gibbs:** Finding sex offenders: It's our responsibility.
- 66 'Net Buzz:** USWeb makes its case.

Net Know-It-All. Page 6.

Message Queue. Page 36.

Editorial and advertiser indexes. Page 63.

FEATURES



CIO Steve Randich is putting NT to the test at The Chicago Stock Exchange.

BRIDGING THE GAP: Windows NT Server is making strides in scalability, but isn't close to catching Unix. Page 41.

REVIEW:

Netscape Application Server 2.1 proves to be a high-performance Web application engine for the enterprise. Page 47.

FIND IT ON FUSION

To quickly get to any online info referenced in *Network World*, enter its DocFinder number in the input box on the home page.



NetworkWorld

Fusion
www.nwfusion.com

This Week

Only on Fusion

VPNs. Virtual private networks are getting a lot of press attention these days. But what are actual users doing with them? Read comments from folks who are building VPNs, then add your experiences to our online forum. **DocFinder: 6547**

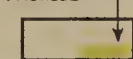
Name That 'Toon 2. It's time for our second cartoon contest. Look at a blank Teletoon, then provide the caption. Winner gets a great prize (oh, OK, a T-shirt). **DocFinder: 6633**

Standards. In print, Kevin Tolly this week excoriates Cisco for not supporting the High-Speed Token Ring effort (page 24). Online, Fred McClimans also blasts Cisco for its move. What do you think? **DocFinder: 6634**

IT jobs. The discussion in our IT job-shortage forum has shifted from the issue of importing foreign workers to the skills you need to get ahead in this field. What are your techniques and tips? **DocFinder: 6635**

HOW TO GET ONTO NETWORK WORLD FUSION

Click on Register on the home page and follow the instructions. Subscribers, keep your NWF number — highlighted on the front cover's mailing label — handy during registration. Nonsubscribers must fill out an online registration form.



How to contact us

WRITE: Network World, 161 Worcester Road, Framingham, MA 01701; **CALL:** (508) 875-6400; **FAX:** (508) 820-3467; **E-MAIL:** nwnnews@nwn.com; **CIRCULATION:** (508) 820-7444; nwcirc@nwn.com; **STAFF:** See the masthead on page 8 for more contact information; **REPRINTS:** (612) 582-3800.

News briefs, April 13, 1998

In your cyberbonnet, with all the frills upon it



■ This year for the first time children from around the world will be able to participate in the annual White House Easter Egg Roll. The Easter Egg Roll will be cybercast on the Internet. EarthLink Network, Inc. is coordinating the event with more than 30 technology companies. The

Easter Egg Roll will be broadcast today using 10 video cameras, eight stationary cameras and two roving cameras. Those participating over the World Wide Web can choose which camera view they want by clicking on it at www.easter.earthlink.net or at www.whitehouse.gov.

Virtual private battle

■ Intelispan, Inc. wants to outdo GridNet International in the virtual private network (VPN) game, and Intelispan wants to do so using GridNet's international network. Intelispan plans next month to announce exSPANd, a dial-up VPN service that will run over GridNet's backbone but will cost less and include security features that GridNet's services lack. GridNet, owned by WorldCom, Inc., has sold long-term exclusive access to its network to Intelispan. The two companies offer similar services, but Intelispan plans to add voice and video services, which GridNet does not have. Intelispan also plans to add monitoring and management of customer networks, a help desk and the issuing of security certificates. For the complete story log onto Network World Fusion (www.nwfusion.com) and key in DocFinder number 6636.

Big Blue calls for beefed-up security



IBM's Gerstner

■ IBM Chairman Lou Gerstner last week called for unrestricted levels of U.S. domestic encryption technology so corporate networks can be better protected from hackers. He also urged the U.S. government to work closely with other nations on a global encryption policy. Speaking at the Georgia Institute of Technology, Gerstner said the public's right to privacy should be measured against the right and need of companies and governments to control access to sensitive networks. He did

not address the issue of precisely how that balance can be reached. As for privacy and security issues, he said corporations need to take a hard look within their own offices because most security holes result from lax enforcement of existing policies.

Foundry hammers out ServerIron

■ Foundry Networks, Inc. today is announcing the ServerIron server load balancing switch. The switch uses Layer 4 header information to balance traffic among multiple servers. The ServerIron server load balancing switch with eight 10/100M bit/sec Ethernet ports is available for \$6,295. A 16-port 10/100M bit/sec model costs \$9,995. A two-port Fast Ethernet expansion module sells for \$1,695, and the two-port Gigabit Ethernet expansion module sells for \$3,695. For the complete story log onto Network World Fusion (www.nwfusion.com) and key in DocFinder number 6637.

IXCs oppose RBOC long-distance data gambit

■ AT&T, MCI Communications Corp. and WorldCom, Inc. last week told the Federal Communications Commission they oppose a move by three regional Bell operating companies to gain expedited entry into the long-distance market for data networks. Bell Atlantic Corp., Ameritech Corp. and US WEST, Inc. filed their petitions under a section of the Telecommunications Act of 1996 that requires the FCC to ax regulations impeding the development of broadband data nets. The RBOCs claim they should be allowed to carry Internet backbone traffic beyond local calling areas. Opponents disagreed. "This would allow them to transfer their monopoly from the old network to the new network," said Mark Rosenblum, AT&T's vice president for law and public policy.

BlazeNet fires up its switches

Start-up readying application switch for midsize companies.



By Bob Brown

Framingham, Mass.

When newcomer BlazeNet, Inc. unveils its first product this week, the maker of integrated LAN and WAN routing switches will set out to prove it is not just another start-up.

The company, which has been operating in stealth mode since incorporating in January 1997, is banking on an advanced Application Specific Integrated Circuit (ASIC) chipset and bold marketing to set itself apart.

While company officials declined to provide product or pricing details, sources close to BlazeNet said the company will introduce an easy-to-use device called the AppSwitch 2000. The device will be aimed at companies with 100 to 1,000 employees and IS staffs with one to five members.

BlazeNet — recognizing that terms such as quality of service (QoS), class of service (CoS) and Layer 4 switching can intimidate even the most sophisticated IT managers — has designed its ASICs to automate QoS and CoS decisions and to forward traffic at wire-speed.

Beta test

The switch, which will enter beta-testing in May, is being designed to look at the first 100 octets of each frame and then make routing decisions based on the information examined.

BlazeNet will configure its switch to give applications such as Lotus Development Corp.'s Notes and SAP AG programs priority over basic Web site requests and e-mail.

The company will also pro-

vide customers with tools to define their own QoS and CoS parameters. For example, e-mail to the boss would get priority over a Notes document exchange between lower level employees.

BlazeNet will pack a variety of LAN and WAN interfaces into its switch, including those for Fast Ethernet, T-1 and 56K bit/sec modem connections.

The company plans to showcase the switch at NetWorld+Interop 98 next month in Las Vegas. And rather than slumming alongside other start-ups in the designated Start-up City section of the show floor, BlazeNet will have its own 30-by-30-foot booth, located among the big boys. In addition, BlazeNet will try to call attention to itself by adopting a hip blue firefly as its mascot.

Blazing engineering

But it was the engineering experience of BlazeNet's founders — a handful of former Digital Equipment Corp. engineers involved in building the GigaSwitch and other products —

PROFILE: BLAZENET, INC.

Founded: 1997

Headquarters: Framingham, Mass.

Primary product: AppSwitch 2000, a LAN and WAN routing switch

Management: Barry Spinney, president (formerly of FORE Systems and Digital Equipment); the search is on for a CEO

Employees: 28

Funding: \$2.5 million in venture financing from Egan-Managed Capital, Hambrecht & Quist, and Texas Instruments Venture Partners

Competitors: Acclaim, Cisco, others

Fun fact: The company's mascot is a blue firefly named Blaze.

that convinced three venture capital firms to invest a total of \$2.5 million in the company last July.

"You don't get to mention 'Digital' and 'entrepreneurial' in the same sentence too often," said Mike Shanahan, a general partner with Egan-Managed Capital, which joined Hambrecht & Quist and Texas Instruments Venture in funding BlazeNet.

But Shanahan said since Digital is known for its engineering

"You don't mention 'Digital' and 'entrepreneurial' in the same sentence too often."

—Mike Shanahan, Egan-Managed Capital.

talent, he jumped at the chance to back a firm anchored by Digital alums Barry Spinney (the start-up's president), Nigel Poole, Richard Szmauz and Ted Ross.

BlazeNet also includes former employees from FORE Systems, Inc. and other big-name network companies.

Not a garage band

While the company did not actually start up in the proverbial garage, BlazeNet did have its beginnings in an office overlooking a garage — and within smelling distance of a mincemeat company in Natick, Mass.

The question now is: Can BlazeNet survive in the hyper-competitive internetwork market? Or will the company be made into mincemeat by the likes of Cisco Systems, Inc. and 3Com Corp.?

© BlazeNet: (508) 370-4343

Be a

NET KNOW-IT-ALL

For the answer to this week's question and more net trivia, visit Network World Fusion and enter 2349 in the DocFinder box.



This week's question:

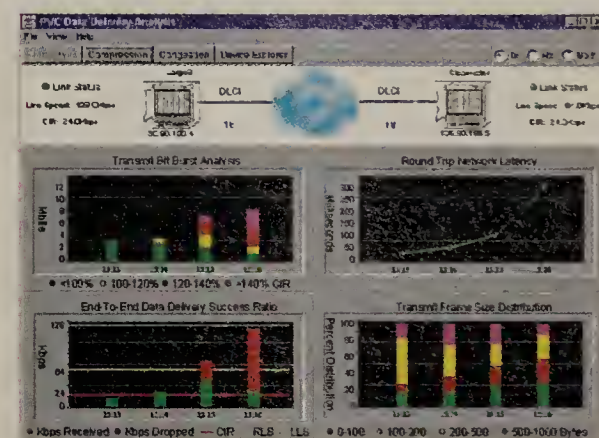
Jan Lindelow is CEO at which of these companies: ArrowPoint, Juniper, Shiva or Tivoli?

www.nwfusion.com

Finally, you can see what's happening in your network with FrameSaver™ SLV™

Your phone is ringing off the hook. Someone in the company is taking more than his or her fair share of the bandwidth. But who?

With FrameSaver SLV (Service Level Verifier), you'll be able to spot your network hogs—and a whole lot more. The first of its kind, this solution



joins Paradyne's advanced diagnostic tools with NetScout's standards-based remote monitoring (RMON) intelligence so you can manage your network like never before. Identify trends, check service levels, and quickly find and fix problems—in real time. FrameSaver SLV lets you monitor traffic as far as layer 7. And you'll be able to conduct non-disruptive Permanent Virtual Circuit (PVC) loopback tests like you can with a leased line.

As a result of these sophisticated features, you get more control, better performance, and greater savings. FrameSaver SLV also makes installation fast and easy.

To find out more, give us a call. Or if someone in marketing isn't hogging the network, visit our Web site.

With features so advanced,
no one else comes close.

Standards-based RMON	✓
Identification of bandwidth hogs	✓
Non-disruptive PVC loopbacks	✓
Router independent	✓
Up to layer 7 monitoring	✓
Rapid return to service	✓
Service level verification	✓

Your Frame Relay network hog used to be anonymous.

Now it's Scott in Marketing.

Feds seek escrow allies, find enemies instead

By Ellen Messmer
Washington, D.C.

If you're looking for any of the billions of dollars in research grants the federal government hands out each year, you may hear the feds tell you they want access to your work.



That's because several agencies, including the National Institutes of Health (NIH) and the Department of Transportation, now accept grant applications and research documents electronically. And the government wants "back door" access to any encrypted data.

Benign enough on the surface, the electronic grants process is reigniting the debate surrounding the Clinton administration's push to have the industry use encryption key-recovery techniques so the government can access your scrambled data without your help.

Some users are just saying, "no."

When the NIH recently asked the Massachusetts Institute of Technology to sign a contract that called for MIT to hand over encryption keys used in submitting electronic grant applications, the university balked.

"There was [wording] in the document that NIH would be acting as the 'key-recovery center,'" said Jeff Schiller, MIT's manager of network services. "[NIH] said, 'if you are going to encrypt the files, do it in a way that we can have the key.'"

Arguing that government warehousing of user encryption keys creates security vulnerabilities for the user and poses disturbing social-policy implications, Schiller convinced MIT not to agree to NIH's demand.

"The whole thing would set a dangerous precedent," said Schiller, who is also the Internet

versity, the state of Utah, the state of Washington and others using it," Smith said.

He added that about a dozen other federal agencies are waiting to make use of the Department of Transportation key-recovery application.

The Department of Energy has been testing Trusted Information Systems, Inc.'s Recover-Key technology, according to the systems integrator on the project, Federal Information Exchange, Inc.

Although MIT is balking at using government key recovery, the University of California, the University of Pennsylvania, the University of Notre Dame and the University of Florida are going along with it, said sources at the Gaithersburg, Md.-based systems integrator.

There are at least 10 other key-recovery projects for electronic commerce (see graphic).

A KEY TEST

Federal agencies testing key-recovery encryption for electronic commerce:

- Small Business Administration
- Department of Energy
- Patent and Trademark Office
- Department of Transportation
- National Institutes of Health
- Department of the Treasury
- Social Security Administration
- Lawrence Livermore National Labs
- National Technical Information Services
- National Institutes of Standards and Technology



Al Gore's National Performance Review office directs the key-recovery tests with \$17.6 million in funding from the National Security Agency, the Central Intelligence Agency, the Department of Defense and the Department of Justice.

Engineering Task Force's security area director. "The Clinton administration just wants to have everyone sign these [contract] documents so they can build the case that there's support for key recovery."

But these kind of concerns are overblown, and not everyone is balking at government key recovery, said Bradley Smith, electronic grants program manager at the Department of Transportation.

The agency, which hands out \$23 billion in grants each year, just started using a Java-based key-recovery application that works with an encryption PC Card so users can submit grants in encrypted form to the department.

"For the secure grants application, we now have Cornell Uni-

versity, the state of Utah, the state of Washington and others using it," Smith said.

The projects and their millions of dollars in funding are administered directly by the 40-member staff of Vice President Al Gore's National Performance Review in cooperation with the Department of the Treasury.

The Social Security Administration, for example, tested receipt of encrypted W-2 forms over the Internet using key recovery with Pitney Bowes, Inc. and other companies.

The results of the government projects will be summed up in a report called "Access for

Trust," which will contain policy recommendations for how government agencies should use key-recovery technology in electronic commerce, said White House sources.

The White House hopes to release "Access for Trust" this month. ■

NetworkWorld

Editor in Chief: John Gallant
Editor: John Dix

NEWS

News Editor: Doug Barney
News Director: Bob Brown
Associate News Editor: Michael Cooney
Phone: (508) 875-6400

NETWORK WORLD FUSION

Online Editor: Adam Gaffin, Phone: (508) 820-7433
Online Reporter: Sandra Gittlen,
Phone: (508) 820-7431; Online Researcher: Jason
Rakitin, Phone: (508) 820-7532

LOCAL NETWORKS

Senior Editor: Christine Burns
Phone: (508) 820-7456; Senior Editor: John Cox,
Phone: (978) 834-0554, Fax: (978) 834-0558;
Senior Editor: Robin Schreier Hahman,
Phone: (203) 459-9948;
Staff Writer: Scott Lajoie, Phone: (408) 567-4180

INTERNETWORKS

Senior Editor: Jim Duffy, Phone: (508) 820-7525
Senior Editor: Tim Greene, Phone: (508) 820-7422
Staff Writer: Marc Songini, Phone: (508) 820-7484

CARRIERS & ISPS

Senior Editor: David Rohde
Phone: (202) 879-6758; Fax: (202) 347-2365
Senior Writer: Denise Pappalardo
Phone: (202) 879-6745; Fax: (202) 347-2365

INTRANET APPLICATIONS

Senior Editor: Ellen Messmer,
Phone: (202) 879-6752, Fax: (202) 347-2365;
Senior Writer: Paul McNamara,
Phone: (508) 820-7471; Senior Writer: Chris Nemy,
Phone: (508) 820-7451; Senior Editor: Andy Eddy,
Phone: (650) 574-9222, Fax: (650) 574-9223

COPY DESK/LAYOUT

Copy Chief: Charley Spector
Senior Copy Editor: Melissa Adams
Copy Editors: Lisa Kaplan Adase, John Dooley,
Denise Dubie, Melissa Reyen

ART

Design Director: Rob Stave
Associate Art Director: Tom Norton
Deputy Art Director/IntraNet: Allyson Nickowitz
Graphic Designers: Lisa Houseman, Paul M. Lee
Online Designer: John Fischer
Graphics Coordinator: Pauline Chouinard

FEATURES

Features Editor: Paul Desmond,
Phone: (508) 820-7419, Fax: (508) 820-1103
Managing Editor, Features: Amy Schurr,
Phone: (508) 820-7485, Fax: (508) 820-1103
Features Reporter: Neal Weinberg,
Phone: (508) 820-7449, Fax: (508) 820-1103
Associate Features Editor: Susan Collins,
Phone: (508) 820-7413, Fax: (508) 820-1103
Associate Features Editor: Suzanne Gaspar,
Phone: (508) 820-7489, Fax: (508) 820-1103

REVIEWS

Test Center Director: Lee Schlesinger
Phone: (508) 820-7416

Test Alliance Partners: James Gaskin, Gaskin Computer Services; Mark Gibbs, Gibbs & Co.; Edwin Mier, Mier Communications, Inc.; Joel Snyder, Opus One; Dennis Williams, ProductReviews.com

Contributing Editors: Daniel Briere, Mark Gibbs, James Kobelius, Edwin Mier, Mark Miller, Alan Pearce
Buyers Guide Contributors: Tony Croes, Linda Musthaler, Currid & Co.; Mark Miller, DigiNet Corp.; James Kobelius, I.C.C., Inc.; Edwin Mier, Mier Communications, Inc.; Daniel Briere, Melodie Reagan, Christine Heckart, Lisa Henderson, Beth Gage,
Telecommunications & Distribution House

INTRANET

Executive Editor: Beth Schultz,
Phone: (773) 283-0213, Fax: (773) 283-0214
Senior Editor: Peggy Watt, Phone: (650) 903-9519,
Fax: (650) 968-3459
Art Director: Tom Norton
Deputy Art Director: Allyson Nickowitz

Editorial Operations Manager: Cheryl Crivello
Office Manager, Editorial: Glenn Falsod
Editorial Assistant: Pat Joseph

Windows Terminal prices will cause sticker shock

NT Workstation software alone could hit \$450 per seat.

By John Cox

Fort Lauderdale, Fla.

Say the word "terminal" and most people think "cheap." Think again when it comes to Windows-based Terminals. The fact is, some corporate users may experience a bit of sticker shock when they see Microsoft Corp.'s upcoming thin-client product.

Microsoft last week told channel partners to budget for the software, now called Windows NT Terminal Server Edition (TSE), as if they were deploying Windows NT Workstation 4.0 on desktops and NT Server 4.0 on servers. Final TSE pricing will be announced nearer to the June shipping date.

Besides the cost of the device, usually about \$600, and assorted server licenses, users may have to cough up as much as \$320 per seat for the NT Workstation license. The overall Microsoft software tab could reach over \$450 per seat. And you can forget about concurrent licensing. Microsoft will charge for every user that has the potential to log on.

Users accustomed to low-cost text terminals may find the prices jarring, and so may current users of Citrix Systems, Inc.'s WinFrame software, on which the Microsoft product is based. That's partly because Citrix uses a concurrent licensing model, which counts only users actually logged on to

WinFrame.

Microsoft revealed these pricing details at last week's Citrix reseller conference here. The pricing structure means companies deploying TSE will pay for an NT Server license, an NT Workstation license for each Windows-based Terminal and a Client Access License (CAL) to allow the terminal to access the server.

"[The Microsoft pricing] looks pretty rough," said Scott Gorchester, president of Moose Logic, Inc., a Citrix systems integrator in Woodinville, Wash.

Microsoft defended its pricing turf. "We don't believe in pricing Windows in concurrent licensing," said John Frederiksen, a product manager for TSE.

That makes sense to some observers.

"Microsoft's pricing is very aggressive compared to multi-user operating systems from other vendors," said Michael Kantrowitz, executive vice president of Neoware Systems, Inc., a thin-client computer vendor in King of Prussia, Pa.

Current retail prices for the relevant Microsoft products are as follows:

- NT Server 4.0 (including CALs for 10 users): \$1,129
- NT Workstation 4.0: \$319 (upgrades from previous NT versions: \$149)
- Twenty-user CAL pack: \$659 (\$32.95 per client). ■



BE PART OF THE NEW ECONOMICS OF NETWORKING.

Try the Accelar Routing Switch free for 45 days.

Register to see if you qualify for a free trial of the Accelar Routing Switch today.

Call 1-800-8 BAYNET ext. 371. Visit <http://flow.baynetworks.com/offer>. Or snail mail this card.

Name: _____

Title: _____ Company/organization: _____

Address: _____

Phone: _____ Fax: _____ E-mail: _____

Please describe your company:

☐ End user ☐ Reseller/VAR/integrator ☐ ISP/telco/cable modem ☐ Consultant

Number of employees: _____ Are you currently working on a project? Y/N Start date: _____

Limited time offer. Certain restrictions apply.



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 1216 FRAMINGHAM, MA

POSTAGE WILL BE PAID BY ADDRESSEE

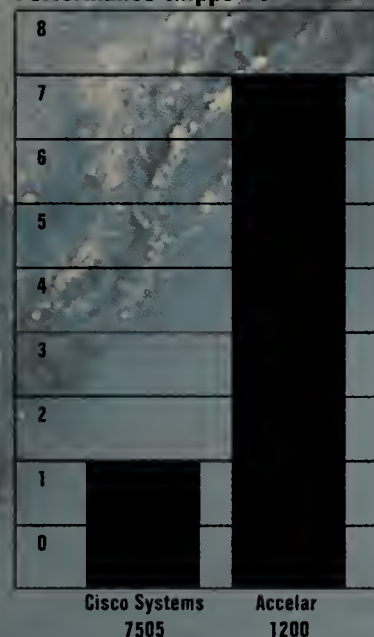
BAY NETWORKS
PO BOX 9345
FRAMINGHAM, MA 01701-9711



THE NEW ECONOMICS OF NETWORKING. THE ACCELAR ROUTING SWITCH VERSUS CISCO ROUTERS.

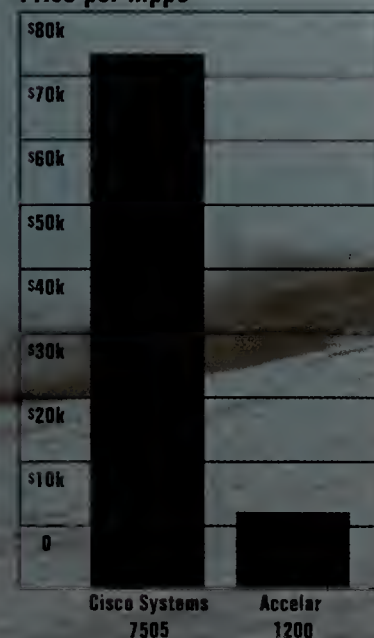
INFORMATION FLOW*

Performance (Mpps**)



CASH FLOW*

Price per Mpps



**Adaptive Networking:
Switching/Routing
Access
Network Management
IP Services**

Business success
demands constant
improvement. And add-
ing Bay Networks Accelar™

Routing Switch family to your net-
work is a great way to start. Accelar
provides remarkable IP performance gains
at a fraction of the competition's current cost.

And your existing network doesn't have to change.

Simply front-end your existing routers (even Cisco's)
with Accelar Routing Switches. Information flow dramati-
cally increases. And so does cash flow. Call 1-800-8 BAYNET

ext. 371 to evaluate an Accelar Routing Switch on your network
free†. Your network can't wait. And neither can your bottom line.

Visit www.baynetworks.com/go/a24 or see us at Booth 2107 at N+1.



Bay Networks

Where Information Flows.

*Based on published benchmark performance data and published price lists. **Millions of packets per second. †Subject to restrictions. Contact your local Bay Networks representative for more information.
©1998 Bay Networks, Inc. All Rights Reserved. Bay Networks is a registered trademark and Accelar and Where Information Flows are trademarks of Bay Networks, Inc.

Spam-busters to Usenet community: 'Don't call us'

Moratorium unleashes more spam on some sites, sparks debate about tactics.

By Paul McNamara

An ongoing moratorium on volunteer antispam efforts will render Usenet unusable and will cripple e-mail servers over time, claimed activists who would welcome such chaos. Their goal is to prompt more Internet service providers, and an apathetic public, to fight their own spam battles.

Early results of the moratorium, which three dozen Usenet "de-spammers" started April 3, are difficult to measure. There have been anecdotal reports of news servers stalling and newsgroup spam increasing dramatically in certain areas, according to a leader of the campaign.

The de-spammers have stopped issuing the hundreds of thousands of daily "cancel" messages they said had been keeping Usenet spam under artificial control. According to their estimates, 40% of Usenet messages are spam, 40% are "cancels," and only 20% are legitimate postings.

The de-spammers' goal is to put themselves out of business by prompting ISPs and other Usenet server hosts to install filters and crack down on spammers.

Some of the de-spammers are also urging antispam activists to refrain from issuing formal complaints to ISPs about e-mail spammers. These efforts would be made in the hope that a resultant increase in unfettered junk e-mail would prod the general public to rise up against e-mail spam. This tactic has drawn fire from some supporters of the Usenet cancel moratorium, who contend it will be ineffective, if not counterproductive.

The impact of the Usenet action has been diluted somewhat by the decision of a single prolific de-spammer, who goes by the pseudonym "Cosmo Roadkill," to continue issuing cancel messages.

Roadkill, who could not be reached for comment, reportedly told moratorium organizers he likened their action to a strike by volunteer firefighters. However, he did agree to arm his cancel messages with a 22-hour

delay, which will limit their effectiveness, and therefore, advance the moratorium cause.

Chris Lewis, a moratorium organizer and computer security consultant, said he and his cohorts had hoped to hold back 95% of all spam cancels. They

that group, 93 [of them] were pornographic pictures and sex advertisements."

Despite criticism from some quarters, backers of the e-mail spam complaint moratorium intend to continue to carry out their plan.

"If the e-mail moratorium is followed, I expect to see an increase in spammed e-mail, [which] is really the point," said Charles Hughes, a systems administrator at the Connecticut Department of Higher Education, in Hartford. "It is time

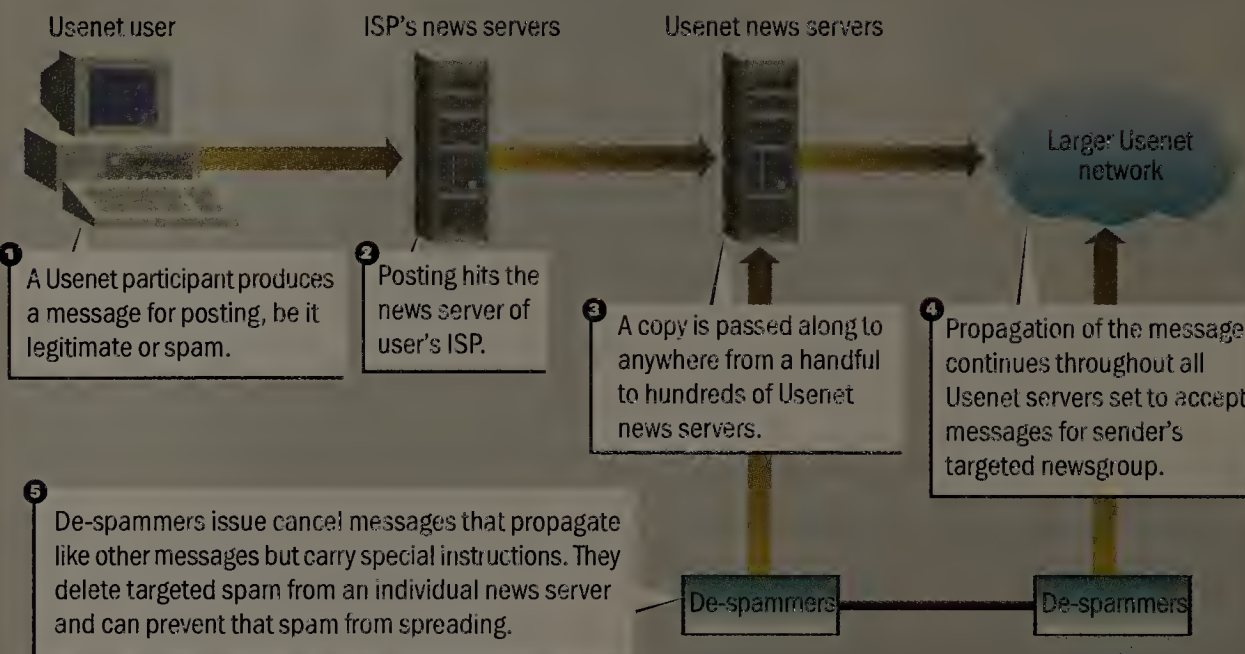
for the average person to stop hitting the delete key and start hitting the reply key, even if all they do is complain to their own postmaster."

However, any grass-roots effort to halt e-mail spam complaints is unlikely to work the way its supporters envision it, according to Paul Hoffman, director of the Internet Mail Consortium. "The amount of additional spam that might be caused would be quite small," he said, and therefore, will not be as noticeable as the extra Usenet spam.

Such a tactic may actually be counterproductive, some believe, as a drop-off in complaints could lend legitimacy to spam, which is also known as unsolicited bulk e-mail (UBE).

"UBE senders will be able to say, 'See, no one is complaining about it. No one really minds after all,'" said Greg Samson, a Webmaster based in Seattle. "More UBE senders will become entrenched [and] the idea of UBE being acceptable will become entrenched with them." ■

HOW USENET SPAM HUNTERS WORK



have managed only 60% to 75%, he said, although "almost all of the rest have these 22-hour delays in them." The bottom line is: 95% of Usenet spam is surviving its first 24 hours; about half is getting cancelled after 24 hours; and the balance is going untouched.

As a result, moratorium organizers "are starting to hear from [Usenet] sites that are creaking under the strain," Lewis said. "I have heard of at least four or five servers stalling, [and] I'm hearing reports of volume increases [of spam] of anywhere from 20% to 400%."

According to Lewis, the impact of the moratorium can be seen most graphically in newsgroups such as alt.sexual.abuse. recovery, a forum to which victims of sexual abuse turn for support and advice.

"We had been keeping that [newsgroup] fairly clear, like one or two spams a day would get through," Lewis said. "Last time I looked, of the last 100 postings that had arrived in

"Of the last 100 postings that had arrived in that group, 93 [of them] were pornographic pictures and sex advertisements."

—Chris Lewis, moratorium organizer

IBM takes off PC management gloves

Big Blue uses Java agents to check the health of corporate PCs.

By Marc Songini

In a wide-ranging announcement, IBM this Wednesday will roll out two new servers, a management software suite for departments and workgroups, and new management software that will be built into PC motherboards.

A big piece of the pie is a new management software package for Windows NT environments, co-developed with Intel Corp. and partially based on the previously announced Alert on LAN package. The unnamed management suite was developed under the auspices of the IBM/Intel Advanced Manageability Alliance (AMA).

Sources said the suite uses Java agents to collect various configurable types of information from clients, servers and applications on the network. Any user with a Java-enabled browser can access this data via a Java applet.

IBM did not comment on the announcement.

According to Frank Dzubeck, president of Communications Network Architects, a consultancy based in Washington, D.C., the management tool will present a single image of NT network resources to an IT manager.

The management software also can converse with Alert on LAN-based firmware that will be embedded into the motherboards of corporate NT-based PCs. The completed package alerts network administrators of problems at an NT desktop—even if the unit has been shut off or if its operating system is malfunctioning.

The embedded technology notifies IT staff of problems with the PC's hard drive, CPU temperature, memory and more. If the PC is disconnected from the network or has its CPU removed, an electronic ping alerts IT staff.

The new software/hardware package can feed Intel's LAN-Desk Client Manager, IBM Netfinity Manager and Tivoli

Systems, Inc.'s TME 10.

Another key component of the rollout is two PC servers from IBM's Netfinity division: the 3000 for departments and the 5500 for larger nets.

The 5500 will run Windows NT, SCO Unixware, AIX and IBM's OS/2, and will carry up to two of Intel's newest 350-MHz or 400-MHz Pentium II chips. IBM also has added hot-swappable disk drives. The PCI slots and built-in network information cards have hot-swappable capabilities as well.

Also included is the NetBay 3 RAID storage device, a small external disk bay that attaches to the server and increases storage up to 600G bytes.

The Netfinity 5500 server will probably start at around \$6,000. The smaller Netfinity 3000 carries a 266-MHz/333-MHz Pentium II chip and has 4.51G bytes of memory. It will cost between \$1,700 and \$3,000 depending on configuration. ■

WANT TO GET MORE OUT OF YOUR EMPLOYEES?

Employees are your biggest asset. They can also be your biggest challenge. But with top-quality

educational services from Sun, you can finally find out what your employees know. And more importantly

what they don't know. That way you can give them the right training, right now. So

they can perform more effectively, more efficiently and uh, yes, even more profitably.

We're eminently qualified to judge. Sun invented Java™ technologies. And Sun trains and

certifies more employees in Java, Solaris™ and UNIX® technologies than any other organization in the world.

What's more, Sun also offers you professional and support services that integrate and optimize all the

parts of your organization into a powerful whole. A more productive whole. So to find out how you can

get more out of your employees, visit our Web site at www.sun.com/service/ad/es.html. Or if you

prefer to talk, give us a call at the toll-free number shown below. THE NETWORK IS THE COMPUTER.™



TRY PUTTING MORE IN. CALL 1-800-604-8378.

Banyan continues quest to stay afloat

Since taking the helm, CEO Ferry has company showing signs of life.

By Christine Burns

About a year ago, Banyan Systems, Inc. was widely viewed as a company that was sinking at a Titanic-like clip. But industry observers say CEO William Ferry, hired early last year, has temporarily buoyed the company by pinpointing markets in which it still has a chance to make money.

During his 14 months at Banyan, Ferry has positioned StreetTalk for NT as a less-expensive alternative to making a wholesale move from VINES to Windows NT. Additionally, he has forced Banyan's management team to cozy up to existing customers with new direct service and support programs; delivered a collection of Internet-related add-on products; and upgraded Banyan's core products to ensure that they work come the year 2000.

Ferry's strategy appears to be working from a financial perspective. Banyan posted 1997 first- and second-quarter losses of \$6.5 million and \$4 million, respectively. But after Ferry restructured the company last summer, Banyan recorded a combined profit for the third and fourth quarters of \$1.8 million and finished the year with \$11 million in the bank and a \$15 million credit line.

Ferry declined to comment on the company's 1998 first-quarter results, which are set to be disclosed next week.

As evidence that the software company is winning the confidence of others, Ferry pointed to venture capital firm Harbour-Vest Corp. sinking \$10 million into Banyan's coffers last month. "Stabilization was key. Nobody should have expected to see new customer growth before we got the financial side of the house in order," Ferry said. He is now confident that Banyan will hold onto its existing 3,500 corporate customers and will woo new ones.

Industry analysts said Banyan actually does have a window of opportunity over the next couple of years on the NT integration front, given that Microsoft Corp.'s NT 5.0 ship date is slipping into next year.

"It's not exactly a ringing endorsement [of Banyan], because we aren't telling users to



CEO Ferry: bringing Banyan back from near death.

install any new VINES servers," said Michael Silver, a senior research analyst with Gartner Group, Inc., a Stamford, Conn., research firm. "But there certainly is a strong argument for sticking with VINES through 2000."

Silver said users would be better off upgrading existing Banyan servers to VINES 8.5 — the Year 2000-compliant version available this month — instead of waiting for NT 5.0 to ship. "It will be the easier, less-expensive move for anyone who is already heavily

invested in VINES," he said.

Customers can easily integrate existing NT servers into VINES networks by using StreetTalk for NT, an NT version of the directory service that shipped last summer. StreetTalk for NT lets administrators define access rights to NT and VINES resources using the same directory.

A recent study by the Sentry Group, a consulting firm in Westborough, Mass., estimates that it costs up to 15 times more to swap out VINES servers for NT machines than it does to integrate new NT servers into a Banyan network (see graphic).

But a growing number of Banyan customers still question whether Banyan software will

continue to be strategic for them much beyond the year 2000.

Tom Higgs, a technical services supervisor for Arbella Insurance Group, in Quincy, Mass., is using most of the new products Banyan has rolled out in the past year to connect his 23 VINES and three NT boxes to each other and the Internet. But Higgs said he is not confident that Banyan will be able to sur-

vive for long based solely on sales to existing customers.

An engineer with a Canadian telecommunications firm said he gives Banyan a life span of only five more years in his network. "We have 45 VINES servers, and while there has been no push from above to do away with those machines, there's no real push to stick with them either," he said. ■

StreetTalk for NT pays off

For large corporations with more than \$500 million in annual revenue, a complete switch from Banyan VINES to Windows NT would cost 15 times more per user than it would to install Banyan's StreetTalk for NT.

Category	Windows NT	StreetTalk for NT
Hardware	\$155	\$15
Software	\$233	\$7
Training	\$45	\$8
Planning and installation	\$35	\$0
Total	\$468	\$30

SOURCE: SENTRY GROUP, WESTBOROUGH, MASS.

GTE

Continued from page 1

the root causes of network service faults. The software does this by tying network device performance to service availability, which helps the company decide how to spend its networking dollars and where new equipment should go.

"The events [presented by EIS] are very succinct; you don't have to go through reams and reams of event logs," said David Caplan, a senior member of the technical staff in GTE Internetworking's technical solutions and deployment department. The reporting capabilities, Caplan said, let GTE "deliver business-quality metrics to our customers."

Caplan is testing EIS on the network used by 3,800 people to support GTE Internetworking's Internet service. It is comprised of more than 100 Cabletron SmartSwitch 9000 and 6000 switches, and Cisco Systems, Inc. Catalyst 5000 switches and 7500 routers.

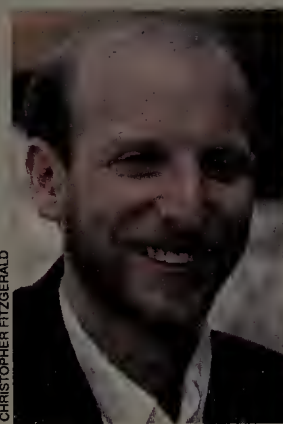
The SmartSwitch 9000s are configured in a fully meshed, full-duplex 100M bit/sec Layer 3 backbone supporting IP, IPX and AppleTalk.

The SmartSwitch 6000s hang off the backbone as departmental switches. Clients and servers connected to these switches are arranged in 60 SecureFast virtual LANs to facilitate moves, adds and

changes, Caplan said. This configuration means the wall jacks throughout the building are essentially backed up by a giant virtual patch pane.

"If someone moves, no one needs to go into the [wiring] closet," Caplan said. The office jack can be activated from a terminal and VLAN access rights granted at the same time.

Traffic is shuttled between VLANs by the Cisco routers, which are tied directly to the backbone switches.



CHRISTOPHER FITZGERALD

"The motivation [for using EIS] is the sheer amount of SNMP information available to us and the desire to use it all."

David Caplan, senior member of the technical staff, GTE Internetworking

The Catalyst switches, on the other hand, support a separate development network for software engineers. Users on this net have restricted access to the SecureFast net through a Cisco router with security policies, Caplan said.

There are 450 "critical" managed network elements in Cambridge alone, some of which may have more than one SNMP agent, Caplan said, so there is a lot of SNMP event data to tally.

That's where Opticom's EIS comes in. Cabletron's Spectrum logs all the event data, but much of it is superfluous to the root of a network fault. For example, when a switch fails, events will be generated for the switch and everything downstream, when in fact all the downstream devices are fine. EIS sifts through this data to extract only the events relevant to the source of the problem.

"We do a lot of filtering to separate the wheat from the chaff," said Roger Dev, chief technology officer at Opticom, based in Manchester, N.H.

EIS processes and analyzes Spectrum event data to gather causal alarms, then determines total network service availability per device, and presents this data in Web-based reports.

A device's total service availability, according to EIS, is the sum of the number of users of that device, plus the number of outages, amount of downtime and mean time to repair. Identifying problematic gear is simply a matter of using EIS to generate availability reports that show when equipment falls below, say, 99.5% availability.

EIS currently supports only Spectrum, but there's good rea-

son for that. Dev is an ex-Cabletron software developer who wrote Spectrum code. Opticom's 14 other employees include a handful of former Cabletron officials, and the company's sales and marketing Vice President is Larry Benson, a former Spectrum sales executive at Cabletron, and brother of Cabletron CEO and co-founder Craig Benson.

But Opticom plans to branch out EIS and have it work with Hewlett-Packard Co.'s OpenView, IBM's NetView and Computer Associates International, Inc.'s Unicenter TNG management platforms, company co-founder Ed Flannery said.

For now, though, EIS is helping GTE Internetworking deliver timely and meaningful service-level data to staffers so they can keep users of the company's Internet service surfing along. Less time spent on network downtime means more time spent creating profitable service innovations.

"The motivation [for using EIS] is the sheer amount of SNMP information," Caplan said. "One way to deal with information overload is to turn off the valve. We opted to keep that valve wide open and come up with best-of-breed information management tools to reap value from all of that data." ■

Get more information online
at www.nwfusion.com
DocFinder: 6632

Indus River rolls out Internet VPN package

By Tim Greene

Acton, Mass.

Start-up Indus River Networks, Inc. this week introduced gear for letting remote users dial in to corporate networks over secure Internet links rather than via more expensive telephone lines.

The company's RiverWorks suite of virtual private network products authenticates remote users and sets up encrypted sessions, known as tunnels, over the Internet.

RiverWorks consists of the RMS-5000 management server, RTS-5000 tunneling server, management software and remote client software.

Remote users dial a local Internet service provider and contact the management server over the Internet. The management and tunnel servers then work together to set up and maintain an encrypted tunnel to the client.

INDUS RIVER FLOATS VPN GEAR

The company's RiverWorks offering:

- Supports dial-up remote access over the Internet.
- Performs authentication or delegates it to a RADIUS or ACE server.
- Maintains up to 2,000 encrypted-tunnel sessions per tunnel server.
- Monitors Internet delay and adjusts data flow accordingly to optimize throughput.



The bottom line is that the Internet replaces what would otherwise be a long-distance phone link.

"This could let our subsidiaries around the world access our network via the Internet to avoid direct-dial calls of \$1 to \$8 per minute," said Denis Goulet, manager of IT operations for Progress Software, Inc., in Bedford, Mass.

Founded in 1996, Indus River is backed by \$5 million in venture capital. The company will compete against the likes of Shiva Corp. and Bay Networks, Inc.

There is little data on how well any of these vendors' boxes work in the real world, so it's too early to tell how well Indus River will fare against the more established companies, according to Brad Baldwin, an analyst with International Data Corp. But he did note that RiverWorks lacks direct dial-up capabilities similar to those offered by Shiva.

RiverWorks client software works on PCs running Windows 95, or soon, Windows 98. If the client is mobile, it can dip into a database of ISP points of presence

and local phone rates to choose the least expensive number to call. That database is maintained on the centrally located management server and downloaded to clients when they call in.

The RiverWorks management server stores user group profiles that assign access rights and generates reports of alarms and traffic.

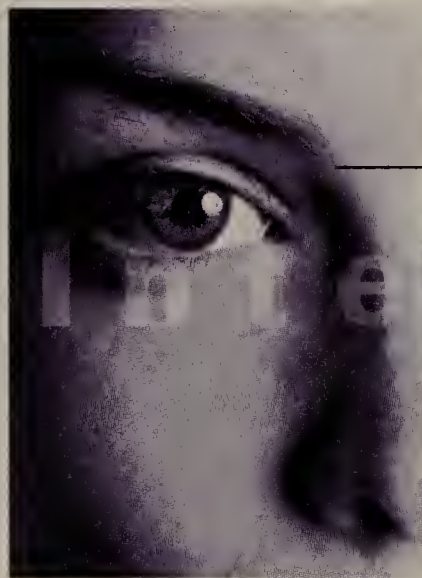
The tunnel server can take in WAN

links directly, via a single optional T-3 port or up to six T-1 ports. The server can also be attached to a 10/100M bit/sec Ethernet LAN that already is attached to a WAN.

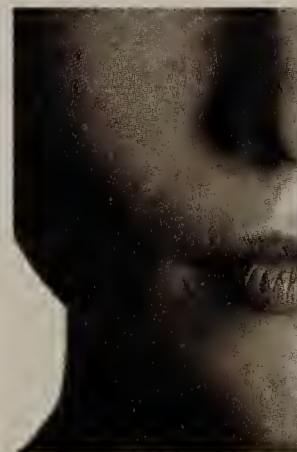
Pricing for RiverWorks starts at \$25,000. RiverWorks will be available in June.

©Indus River: (978) 266-8100

E-Business makes it possible



Integration



Today, you demand enterprise software that works together in your organization, adapts quickly to change and prepares you for tomorrow. But you must also integrate your business with your customers. That's what electronic business is about and DMW makes it all possible. Our family of adaptive, integrated software solutions redefines your possibilities.

Proactive customer care that delivers self-directed capabilities and customer value management.

Convergent billing that allows invoicing on the Net in real time.

Network care that ensures an optimized intelligent and secure environment.

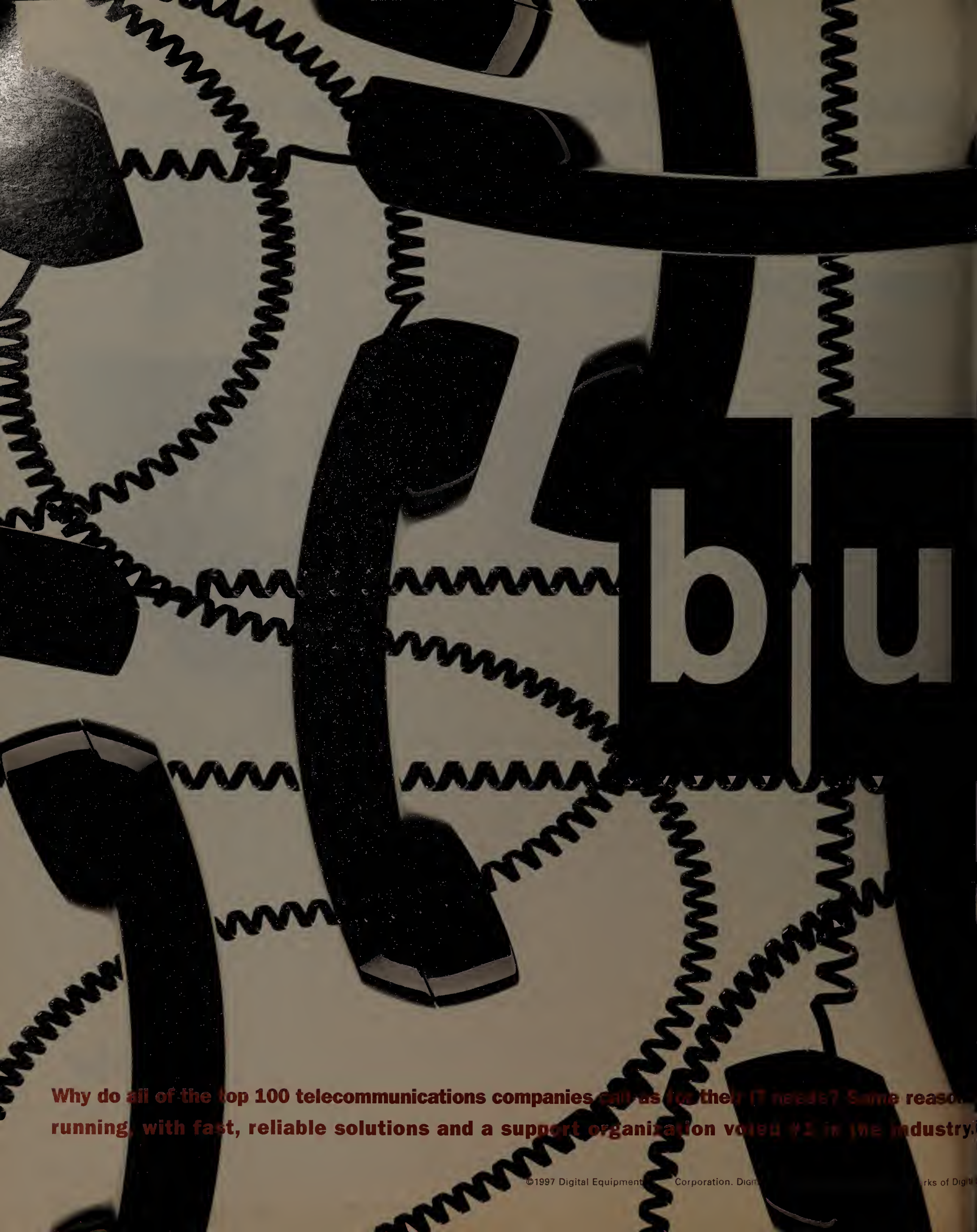
DMW helps you move beyond limits and prepares you for adaptive, integrated e-business.

Redefine possible with DMW.

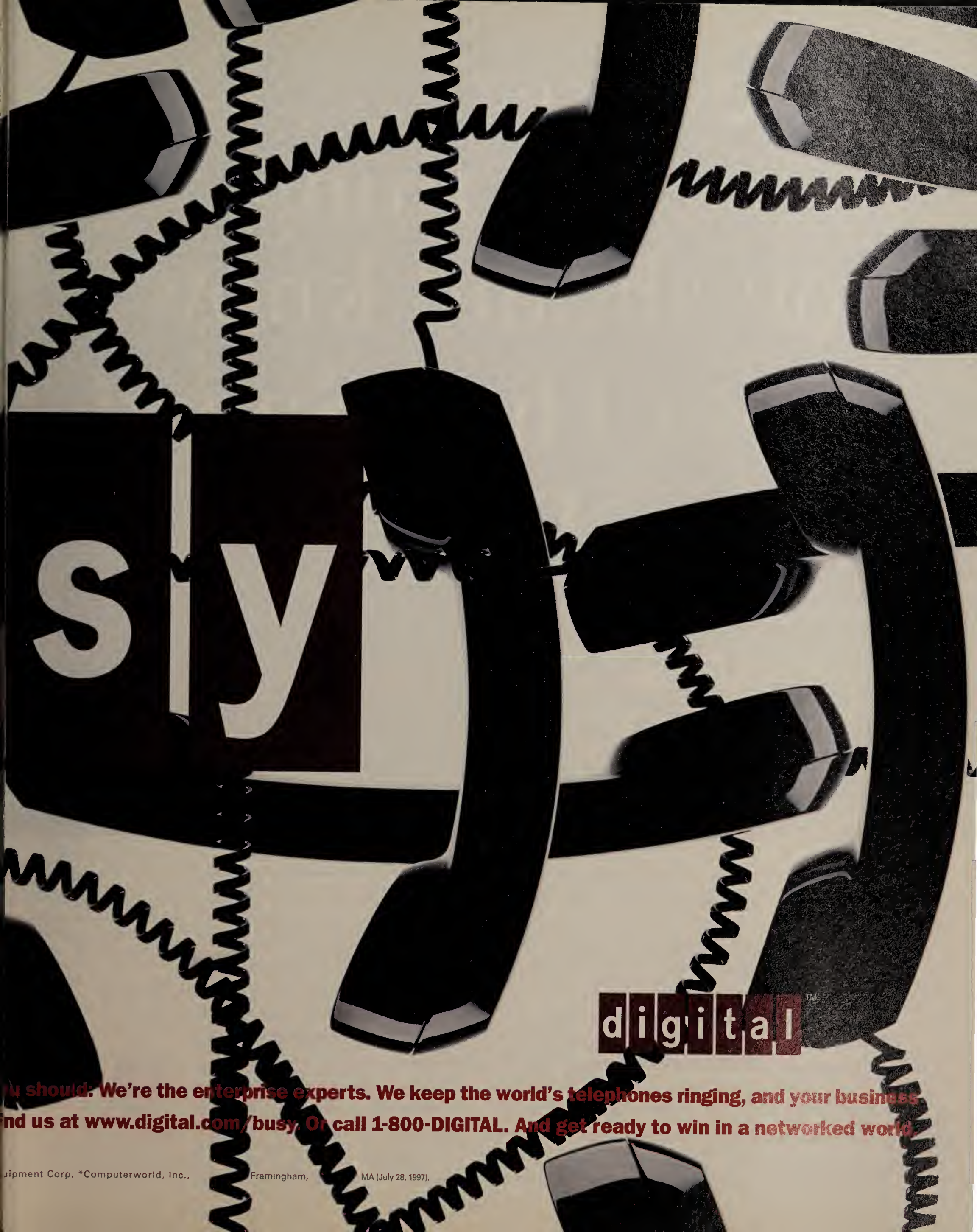


redefining possible™

visit us at networld+interop • may 5-7 booth #5508
800.369.4768 or 719.548.1101 • www.dmwworldwide.com



Why do all of the top 100 telecommunications companies call us for their IT needs? Same reason: we're always running, with fast, reliable solutions and a support organization voted #1 in the industry.



digitalTM

You should. We're the enterprise experts. We keep the world's telephones ringing, and your business
Find us at www.digital.com/busy. Or call 1-800-DIGITAL. And get ready to win in a networked world.

The most **important** thing you should know about High Speed Token Ring.

See us at
NETWORLD+INTEROP 98
The Definitive Networking Event
Las Vegas, May 4-8, 1998, Booth 5543



We are ready, our products are ready. Ready to bring about what can only be described as a quantum leap for Token Ring networking.

At 100 Mbps, the first generation of High Speed Token Ring (HSTR) products will provide a massive boost to backbone and server performance.

So it's reassuring to know that our award-winning Smart Ringswitch and Ringswitch Plus are themselves ready for easy upgrade to HSTR switch-to-switch and server-to-switch links. Allowing you to build on your investment in



Token Ring, secure in the knowledge that Madge is not only able to meet all your current switching

needs, but also help meet them well into the 21st Century.

As a founding member of the HSTR Alliance – the alliance of leading vendors setting the future standards for Token Ring – and with over a decade of innovation in Token Ring technology – Madge Networks is ready to deliver.

To find out more about the Madge Smart Ringswitch family or for our *free guide* to High Speed Token Ring, simply call **1-800-TR-MADGE** now or visit our Web site at <http://www.madge.com> or email us at reply@madge.com.

Because there is no better way to bring yourself up to speed.



Madge Networks

Local Networks

Covering: LAN Hubs, Switches and Management • Operating Systems • Servers • Thin Clients

Briefs

■ **Xylan Corp.** last week announced a partnership with **QuadriTek Systems, Inc.** that will bring IP management capabilities to Xylan's switches. Xylan will integrate QuadriTek's QIPxpress IP management software into Xylan's OmniSwitch and OmniStack switches. QIPxpress will port directly into the Xylan Operating System, and add Dynamic Host Configuration Protocol, Dynamic Domain Name Service and a Lightweight Directory Access Protocol agent. QIPxpress is now available on Windows NT. The integrated products are scheduled to begin shipping in the fourth quarter.

© Xylan: (818) 880-3500

■ **Microsoft Corp.** will hold its annual **Microsoft Tech-Ed 98** conference June 1 to 5 in New Orleans. The event, which caters to software developers, MIS managers and Web professionals, will feature presentations from Microsoft CEO Bill Gates and Executive Vice President Steve

Microsoft
Tech-Ed 98

Ballmer. For more information, call (800) 813-4245 or visit www.microsoft.com/events/teched.

■ **XaQti Corp.** is finalizing development of a new protocol processor technology that will work with the firm's GigaPower Gigabit Ethernet MAC chip, which is scheduled to ship in June. The Protocol Processing Development kit will enable Gigabit Ethernet vendors to integrate network standards such as Remote Monitoring and Simple Network Management Protocol into switches and related products. The kit is expected to debut at NetWorld+Interop 98 in Las Vegas in May.

© XaQti: (408) 487-0800

ArrowPoint targets overloaded server farms

Start-up's Content Smart Switches monitor server activity to balance traffic flows, ensure fast response times.

By Andy Eddy
Westford, Mass.

ArrowPoint Communications last week jumped into the crowded network switch market with a pair of devices that company officials said can dole out content to users more quickly and intelligently than other switches.

The start-up's Content Smart Switches (CSS) are primarily designed to sit in front of servers, balancing user requests across the network and directing requests to the servers best able to handle them.

ArrowPoint is trying to set its switches apart from those offered by competitors, such as Cisco Systems, Inc. and Alteon Networks, Inc., by using a combination of flexible administration tools and intelligent monitoring technology.

Unlike most network switches, the CSS devices look beyond the requested IP address and port number. ArrowPoint's boxes determine the actual content being requested, such as an HTML file, a Real-Audio stream or a File Transfer Protocol (FTP) call.

The switches then allocate bandwidth based on predetermined rules, such as not allowing an FTP session to hog the bandwidth from other requests. The switches also determine how to handle traffic based on administrator guidelines, such as giving priority to requests from a particular domain name.

"[ArrowPoint is] using a different method to determine how to route the packets . . . in that you're targeting the content rather than an address," said John McConnell, president of McConnell Consulting, Inc., in Boulder, Colo.

"I haven't heard of anyone else doing this, but I'm sure others will follow," McConnell said.

In addition, ArrowPoint's switches regularly poll servers to determine their availability and busyness.

The switches employ a user-configurable spider to keep track of what data resides on

which servers, so that the switches can direct requests to the server best able to provide the data. This gives the content provider the ability to partially replicate data on multiple servers, rather than set up completely mirrored servers.

ArrowPoint also claims that its switches reduce the need for separate products, such as load balancers and firewalls. The CSS devices' smart redirection technology takes care of load balancing and can also handle security duties, such as stopping or trapping denial of service attacks.

Founded last April, ArrowPoint has employees who previously worked at companies



ArrowPoint's CS-800 switch provides up to 64 Fast Ethernet ports or eight Gigabit Ethernet ports.

such as Bay Networks, Inc., 3Com Corp. and Cascade Communications Corp., among others. ArrowPoint earned a slot on *Network World's* "Ten Companies to Watch" list for 1998 (NW, Dec. 29, 1997, page 20).

ArrowPoint's CSSes come in two configurations:

- The CS-100, billed as a stand-alone unit, features 12 100Base-TX ports and boasts a switching capacity of 2.5G bit/sec. Four V.35 WAN ports can be added.

- The larger, chassis-based CS-800 has eight slots that can be filled with a combination of port cards. The switch is capable of supporting up to 64 100Base-TX ports, eight Gigabit Ethernet ports, 32 T-1/E-1 lines or 16 high-speed serial interface connections. The device has a total switching capacity of 10G bit/sec.

The CS-100 is set to be released in May and is priced at \$14,995. The CS-800 is set for a June release, and is priced at \$29,995.

© ArrowPoint: (978) 692-5875

Intel extends management software's reach

New modules link LANDesk with OpenView, NetView and Unicenter TNG.

By Scott Lajoie
Hillsboro, Ore.

No matter what enterprise management platform you are using, Intel Corp. wants you to consult a LANDesk window to check on the health of your networked servers and PCs.

Intel last week announced a set of software modules based on its LANDesk system management product that run atop three leading management platforms: Computer Associates International, Inc.'s (CA) Unicenter TNG 2.0, Hewlett-Packard Co.'s OpenView 5.0 and Tivoli Systems, Inc.'s NetView 5.0. These Application Integration Modules (AIM) let net administrators use their primary management consoles to view information collected by LANDesk.

LANDesk measures baseline server and PC specifications, including the proper functioning of a hard drive, memory availability, CPU temperature, fan performance and voltage.

When a predefined performance threshold is exceeded, a LANDesk icon on the administrator's net management console changes in appearance. The administrator can then double click on the icon to open a LANDesk window and find out the status of any PC or server. Administrators can also set policies that trigger automatic alerts.

"Instead of tweaking every node of the network to put a management agent on it, let's make use of preloaded LANDesk products," said Edward Eckstrom, vice president of Intel's small business and networking communications group. "It's easier to put some bits of software on the console to give [console users] the ability to see all of these nodes."

Intel is marketing a console integration guide to third-party firms in hopes of tying LANDesk to even more net management platforms and applications, such as Fujitsu, Ltd.'s Mp Walker, a popular management con-

sole in Japan.

"Intel's goal is to make the corporate user buy an Intel-based PC, which will now fit into the network management scheme," said Rick Villars, an analyst with International Data Corp., in Framingham, Mass.

Intel is making its AIMs available free for downloading at www.intel.com. Users choose the appropriate AIM, register and download the 15M-byte program.

Modules can now be downloaded for HP OpenView 5.0 and Tivoli NetView 5.0. The CA Unicenter TNG 2.0 will be available by the end of the quarter.

© Intel: (800) 538-3373

Get more online:

- An AIM data sheet from Intel

- A look at Novell's Zero Effort Networks management effort



Protecting yourself from pirates

A recent survey by the Canadian Alliance Against Software Theft (CAAST) revealed that 43% of employed

adult Canadians think that pirating software for personal use is OK.

I don't believe the majority of these

software pirates think they are stealing. Nevertheless, they are pirating software, and the practice can spell trouble for you as a network manager.

Such software pirating has come about in several ways. For one, older computer users — those with Unix backgrounds — remember many of the applications they used as freeware.

Software pirating also results from younger and newer users being inundated with freely downloadable applications, evaluation copies and public betas. This barrage of programs leads users to believe that all software is free for downloading.

While much of the software downloaded by users these days carries expiration dates, not all vendors build in a disabling mechanism. Rather, many vendors rely on so-called "nag messages" to remind users to purchase the retail product.

All of this leaves network managers who routinely place application installation files on their networks as potentially unwitting facilitators of software theft.

Users dialing in to your network from home may simply be able to install software on their home PCs via regular phone lines. This download method may be slow, but it's also inexpensive.

The first step you should take in trying to stop employees from illegally downloading software is to start an education campaign. Get other departments, such as human resources, legal and finance, involved.

The CAAST survey found that once respondents were told of the gravity of software theft, 80% replied that they were unlikely to steal software in the future.

Another step you should take is to make it harder for legitimate corporate software to be copied. Don't put installation software in publicly available directories or folders. If installation software must be on the network, make sure it's only available to those who employees who need access to it.

For users with a legitimate need to have an application installed on their home PC, purchase licenses for the users and have them sign an agreement stating that the software must be removed if they leave the company.

By educating users, making it difficult to copy software casually and providing legitimate software users with the tools they need to download programs, you should be well on the way to making your enterprise fully compliant with software licensing terms.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.



Dave Kearns

The one server to buy when you're buying more than one.

Four Pentium® 233MMX utility servers with 256MB RAM and two 3.5" drive bays each

10/100 switching smart hub

12" color TFT LCD pop-up display with keyboard and mouse

Server with Dual Pentium® Pro 200 CPU, 256MB RAM, CD-ROM, and three 3.5" drive bays

Server with Pentium® Pro 200 CPU, 256MB RAM, CD-ROM, and three 3.5" drive bays

Server with Pentium® II 333 CPU, 512MB RAM, and five 3.5" drive bays

Pre-wired 19" x 84" relay rack with power bus. Racks, servers, and accessories customized to fit your needs

Fibre Channel or SCSI external storage and RAID systems with up to 72GB of storage per 8 drive array

CD-ROM tower with network server and hub

Video/keyboard/mouse switches with on-screen control

100% cluster/failover security with Vinca® Standby Server failover software for Windows NT® and Novell® (three servers for one-to-one backup)

Software-controlled UPS

Crystal high-density rackmount servers.

For nearly a decade, Crystal Group Inc. has been providing space-saving, high reliability computers/servers to the communications industry worldwide. Crystal's rackmount servers are available with multiple EIDE or SCSI hard drives, CD-ROM, AC or DC power and industrial level cooling. Our industry standard PICMG 2.0 PC-compatible ISA/PCI architecture allows the latest in processing technology from Intel, Cyrix and AMD. On-board system monitoring and alarm capabilities are available along with a complete line of rack mounted accessories like Fibre Channel storage and cluster/failover backup systems. No matter how many servers you need, let Crystal Group build a rack system for you. **Crystal Group Inc. Doing things no one else can.**

1 800 378 1636 <http://crystalpc.com>



Novell and Netware are registered trademarks of Novell, Inc. • Windows NT is a registered trademark of Microsoft Corporation • Pentium is a registered trademark of Intel Corporation • Vinca is a registered trademark of Vinca Corporation

Crystal
GROUP INC

Tip of the week

Another way to combat software piracy is to keep track of all the software running on your network and on users' desktops. Products are available from Microsoft Corp. and Novell, Inc. as well as lesser known vendors. For more tips on this subject, visit Microsoft's Licenses and Piracy Web site at www.microsoft.com/piracy.



technology features performance

small price

Now you can get Foundry's award-winning, customer-proven Layer 2/3/4 technology in a high density Fast and Gigabit Ethernet chassis. And at a price you can afford.

BigIron™ delivers up to 100,000,000 pps of Layer 2 switching and multi-protocol routing in a single device. With up to 64 Gigabit Ethernet and 156 Fast Ethernet ports, BigIron's non-blocking architecture can handle your toughest requirements. Plus, it's packed with the industry's most complete suite of features.

Best of all, BigIron won't blow your budget. You get all this and more for less than a tenth the price of traditional routers. What are you waiting for? It's time to call Foundry.

Call 1.888.TURBOLAN or log into our web site at www.foundrynet.com for the sales representative nearest you. And don't forget to ask about our FREE TurboMan watch offer!

FOUNDRY
NETWORKS

features

- Route or Switch by Port
- Multi-protocol Routing: IP, IPX, RIP, OSPF, Appletalk
- Layer 2/3/4 Switching
- 4 Levels of QoS
- Multicast Support: IGMP, DVMRP, PIM
- Layer 3/4 Filtering for Security
- Inter-Switch Trunk Groups
- Multi-Homed Servers
- Hot Standby Redundancy
- DHCP Assist
- 70 km Gigabit Ethernet Connectivity for MANs
- Comprehensive Network Management: SNMP, CLI, Web, RMON

See us at
NetWorld+Interop 98
Las Vegas, Booth
75489





There are 2,600,000 IT professionals out there and 14,819,756,871 daily problems to solve.

Obviously, something's got to give.

It's fairly obvious that the role of the IT person has changed considerably in the past few years.

In most cases, it's gone from policeman to fireman, from telling people what they can and can't have, to putting out fires caused by all the stuff they went and got anyway.

One way to make things simpler is to have key parts of your system integrated.

Not surprisingly, this is one of the biggest advantages of our software. We built Microsoft® Windows®, Office, BackOffice® and Visual Studio™ from the ground up to work together in the same familiar way.

More integration = fewer problems, which means you'll have the time to focus on more strategic issues like building a system that meets the unique and dynamic needs of your company.

We call this kind of system a Digital_Nervous_System.



A Digital_Nervous_System relies on distributed PCs and integrated software to make information flow more rich, rapid and accurate.

It helps organizations act faster and make more informed decisions.

It helps users focus on the task, not the technology.

It helps you go from fireman to architect.

Windows, Office, BackOffice and Visual Studio provide an ideal foundation for your Digital_Nervous_System because they're integrated. They also work with an industry's worth of applications, so incorporating new software solutions is easier. Taking advantage of hardware advances is easier. Integrating Internet capabilities is easier.


Of course, none of this will help you sleep better at night.

You'll just lie awake thinking of more important things.

Where do you want to go today?®

Microsoft®

www.microsoft.com/digital_nervous_system/



Is Your Small Office Waiting in Big Lines for Internet Access?



You have one dedicated phone line and modem, right? Which means, only one person on the net at a time. And everyone else waits. So what's the solution? More modems? More phone lines? Too expensive. Plus, you will still have to wait for the modems to slowly transfer data. Consider the FlowPoint™ Instant Internet Bundle instead.

One Router. 25 Times Faster for Everyone.

Your entire business or remote office LAN can experience blazing-fast digital ISDN Internet access with one simple router solution. Connect in just seconds. Then start transferring data up to 25 times faster than 28.8 modems.

A Simple Solution.

With one phone call, you'll get a turn-key solution. We'll arrange for your ISDN line installation and set up your EarthLink Network™ Internet account. All you have to do is install the FlowPoint router – it's so simple to install and use it won't "The Best of LAN TIMES". Then, go online instantly. And yes, the router is compatible with all major network systems.

Affordable, Powerful, ISDN Package.

Go online for only \$599. You won't find a better internet solution for your small office. Order factory-direct today and put an end to the wait.

Call 888.867.4736, or

Visit Our Web Site at www.flowpoint.com

THE BEST OF
LAN TIMES

FlowPoint™
Faster, Simpler, Smarter Routers

©1998 FlowPoint Corporation. FlowPoint™ and the FlowPoint logo design are trademarks of FlowPoint Corporation. All other logos are the trademarks of their respective companies. All rights reserved.

Internetworks

Covering: TCP/IP • SNA • Network Management
Muxes, Routers and WAN switches • Remote Access

Briefs

■ **At next month's NetWorld+ Interop 98 trade show, router start-up NeoNetworks, Inc. will unveil a Fast Ethernet module for its StreamProcessor 2400 Gigabit Ethernet router.**

The ENET 100-24 module sports 24 100M bit/sec Fast Ethernet ports and a single Gigabit Ethernet interface. Fully configured with 16 ENET 100-24s, a StreamProcessor 2400 can support 384 Fast Ethernet connections and 16 Gigabit Ethernet interfaces, Neo said.

The ENET 100-24 module costs \$12,595 and will ship by mid-year.

© Neo: (612) 931-2141

■ **Proactive Networks, a start-up that develops Web-based network management software, last week unveiled its first two offerings.**

Pronto Check inventories all network assets over a four- to six-week period and creates performance "signatures" that reflect the impact of business processes on the network. Pronto Watch is a monthly service that generates reports summarizing network or application activity and delivers them via e-mail or the World Wide Web.

Pronto Check costs \$5,995 for a 500-node network. Pronto Watch costs \$2,500 per month for a 500-node network. Both products are available now.

© Proactive Networks: (408) 327-5550

■ **Shiva Corp. recently announced the availability of its suite of virtual private network (VPN) gear, including the LanRover VPN Gateway, which supports direct-dial and Internet access to private networks. The VPN suite also includes client software, a certificate authority to authenticate users, and management software.**

The LanRover VPN Gateway costs \$9,250, and the software is priced separately.

© Shiva: (617) 270-8300



IBM to tout Fibre Channel server options

By Marc Songini

IBM is looking to boost backbone connectivity options for users by adding support for Fibre Channel across its line of servers.

By year-end, the firm is expected to add Fibre Channel interface boards to everything from its mainframes to its Net-Finity servers.

IBM is also expected to add Fibre Channel support to its 9729 Optical Wavelength Division Multiplexer and to resell a communications device from Ancor Communications, Inc. that will let users link Fibre Channel servers to Gigabit Ethernet backbones.

Until now, IBM has supported Fibre Channel on its RS/6000 servers running AIX and on its RS/6000-based Scalable Power parallel processing servers.

Fibre Channel is a network technology that can support data throughput speeds in excess of 100M bit/sec. It has typically been used to link big servers with high-speed storage devices or to cluster servers to support high-bandwidth applications.

IBM intends to join Digital Equipment Corp., Hewlett-Packard Co., Data General Corp. and EMC Corp. with a line of Fibre Channel products.

IBM's Global Services division is so enamored of Fibre Channel it recently installed Ancor's GigWorks Fibre Channel switches to move hundreds of terabytes of data every night from IBM's Research Triangle Park, N.C., facility to a central backup center.

"1998 will be the year for Fibre Channel," said Ron Howell, network architect at IBM Global Services. Howell is interested in using Ancor's switch in his net to connect workgroups demanding high-speed, wide-bandwidth communications to the backbone.

Howell said Fibre Channel products have load-balancing and automatic failover capacities that are critical to most company's operations. "We can't have our applications down for even one second," he said.

By adding Fibre Channel support to its server line, IBM is trying to cash in on the growing trend to cluster servers, analysts said. Fibre Channel also offers a much more powerful way to link external storage to a server than today's SCSI interfaces. SCSI supports the clustering of at most two servers; Fibre Channel lets users link any number of servers to storage units.

While Fibre Channel products have been available for years, analysts note, their popularity has only now begun to grow (see graphic).

Others said Fibre Channel still has a long way to go before it is considered a mainstream backbone technology.

"Instances of people running Fibre Channel to the desktop are as common as people getting struck by lightning while riding UFOs," said Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J.

As for Ancor, the firm will be announcing a product that lets

users tie Fibre Channel products to a Gigabit Ethernet backbone. The unnamed device will convert Gigabit Ethernet frames into Fibre Channel and vice versa, Ancor said.

Executives at the firm did not disclose the name of its device but said it would cost between \$8,000 and \$10,000 and would be on display at the upcoming NetWorld+Interop 98 trade show. ■

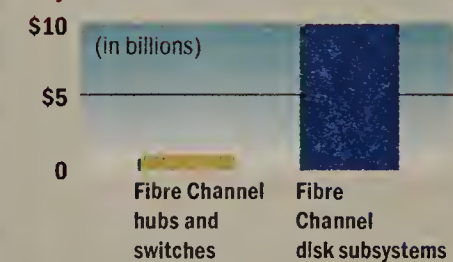
Fast Fibre Channel facts

Fibre Channel is an ANSI-standard high-speed serial data-transfer interface for connecting systems and storage devices.

Fibre Channel supports:

- ▶ 100M bit/sec half-duplex data speeds, 200M bit/sec full-duplex data speeds
- ▶ Distances up to 30 meters between Fibre Channel devices
- ▶ TCP/IP and other protocols

Projected Fibre Channel market in 2000



SOURCE: OATAQUEST, SAN JOSE, CALIF.

Get more online:

- A Fibre Channel primer
- Fibre Channel product lists
- Things to consider before buying a storage system



www.nwfusion.com

Timbuktu gets remote control boost

Software supports 32-bit Windows and Apple Macintosh operating systems.

By Tim Greene
Alameda, Calif.

Netopia, Inc. last week unveiled a version of its Timbuktu Pro Enterprise remote control software that supports Windows 95 and NT, and Apple Computer, Inc.'s Macintosh.

With its new Mac and 32-bit Windows support, Timbuktu Pro Enterprise 2.0 can offer remote control interoperability among computers based on Windows NT 4.0 and 3.51, Windows 3.1, Windows 95 and MacOS operating systems.

The software can take control of computers over telephone lines or the Internet to remotely

fix problems or update software.

The Apple support makes things easier for corporations migrating from Macs to PCs in remote offices, said Brent Baisley, senior analyst with Home Box Office, a subsidiary of Time Warner, Inc. Net managers and help desk workers can work from a single central platform to take over remote Macintoshes and PCs for monitoring, upgrading software and guiding remote users through trouble reports.

"We are 80% Mac,"

Baisley explained about his 600-user remote network. HBO is in the process of upgrading some remote servers from AppleShare 4.0 to 5.0 and upgrading the

Netopia beefs up Timbuktu

New features in Timbuktu Pro Enterprise 2.0 remote control software:

- Integration with management software from Tivoli, DK Systems and Computer Associates
- Windows NT security and Windows Network Neighborhood integration
- Upgraded screen-sharing between Windows NT machines without changing video drivers

server hardware. Timbuktu is making that easier, he said.

Baisley configures the new hardware at his New York site and mails it to remote offices. Staff members in those offices plug the servers in to the power supply and the HBO network, and Baisley finishes the server setup remotely. "I never leave New York," he said.

Timbuktu Pro Enterprise 2.0 also plugs a security hole in earlier releases that allowed any Timbuktu-equipped computer — not just the system administrator's — to take over other people's PCs if security options were not set, Baisley said.

Scheduled to be available by the end of the month, Timbuktu Pro Enterprise 2.0 costs \$5,999 per 100 licenses.

© Netopia: (510) 814-5000

INTERNETWORKING MONITOR

Cisco does not act like a leader

Where have we seen this before? Virtually the entire industry unites behind a standard approach to cranking up LAN speeds to 100M bit/sec. Then

one maverick vendor refuses to support the movement and throws its weight behind an "architecture" of its own.

While eerily similar, this is not the Hew-

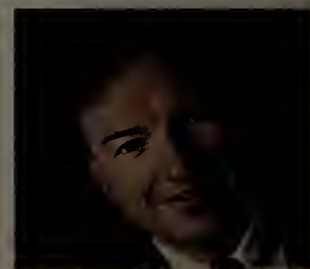
lett-Packard of the mid-1990s pushing its ill-fated 100VG-AnyLAN technology. This is Cisco Systems in 1998, pushing its proprietary Inter-Switch Link (ISL) for token ring in direct opposition to efforts for industry-standard High-Speed Token Ring.

These efforts, by the way, are supported by the likes of 3Com, Bay, IBM,

Madge, Olicom and Xylan. In other words, everyone but Cisco (and Cabletron—but it doesn't support ISL either).

Cisco's decision to withdraw from the High-Speed Token Ring Alliance (HSTRA) can have only one purpose: The company is attempting to torpedo multivendor industry-standard High-Speed Token Ring efforts and promote, instead, the Cisco proprietary ISL technology. Cisco's steadfast refusal to commit to offering any IEEE 802.5 High-Speed Token Ring products in the future is proof of this.

Having failed after six months of "diplomacy" to get the HSTRA/IEEE 802.5 groups to adopt ISL-based technology as the de facto industry standard, Cisco is taking a different approach. Cisco has decided to stage a preemptive strike against vendors supporting industry-standard High-Speed Token Ring. This is an attempt to eliminate IEEE 802.5 High-Speed Token Ring from serious consideration by network managers and make ISL a de facto industry standard. This action comes a



Kevin Tolly

little more than a month before the first industry-standard High-Speed Token Ring prototype products are demonstrated at NetWorld+ Interop 98 in Las Vegas by IBM, Madge, Olicom, Bay and Xylan.

In mid-1997, the industry rejected Cisco's overtures to make ISL the "new" High-Speed Token Ring standard. This action was taken in accordance with customer demands that future, high-speed versions of token ring be completely compatible with existing 4M/16M bit/sec token ring. ISL is not; IEEE 802.5 High-Speed Token Ring is.

Cisco's party line for this steadfast refusal to support 802.5 High-Speed Token Ring is that the vendor's customers don't want it. That's not what the Cisco customers I've spoken to have told me. They are furious that Cisco won't offer industry-standard solutions for High-Speed Token Ring.

When 100VG-AnyLAN had its brief flirtation with the marketplace, Cisco was one of the vendors that backed it. Cisco announced support for a technology that had, literally, zero installed base. Doesn't Cisco at least owe as much commitment to a technology with 20 million installed nodes to which it declares itself a leader? Does Cisco only promote industry-standard technology when it suits the company's internal sales objectives?

Cisco is an industry leader. Industry leaders should offer industry-standard products. Period.

Tolly is president of The Tolly Group, a strategic consulting and independent testing firm in Manasquan, N.J. He can be reached at (732) 528-3300 or at ktolly@tolly.com or www.tolly.com.



Meteorological readings reconciled between sites continent-wide

8.5 megabytes of landing data stream in from 12 planes

Departure and arrival information updated across domestic network

ARE YOU READY?

The information age is all about the power to do more in less time. It's about processing information and making critical

decisions almost instantaneously. ✈ For a national air traffic control system, landing planes with split-second precision is how they build their business. It's also why they choose Newbridge Networks. They count on us to deliver the gigabytes to make it happen. ✈ Whatever your business, our networks help you harness the power of information and find new opportunities in less time. If your business is ready to make every second count, we're ready to deliver.



www.newbridge.com/ready 1-800-343-3600

Web-based management

Is Web ready to manage?

U

nless users have been living under a stone for the past three years, they've heard that the World Wide Web and Internet technologies are the future of network management.

The Web provides a familiar, platform-independent environment from which to manage. A browser lets a network manager access management data from anywhere, as long as he or she has a laptop computer. And Internet technologies such as Java provide the management application integration "glue" that platforms have promised for years but have yet to deliver.



"The Web becomes the platform."

Bill Maro, president, NextPoint

All this considered, it's hard to argue against the Web as *the* platform from which to manage the enterprise. But is the Web ready to take on enterprise management?

Sure, the Web browser can provide a friendly user interface for management reports and device configuration. But these are two routines that have little to do with responding to critical alarms in real time or launching scripts to automate responses to alerts.

In short, the jury is still out on whether Web technologies can fill the bill for mission-critical management of the enterprise.

"How do I look at my Cisco routers and Bay switches at the same time?" asks John McConnell, president of McConnell Consulting, Inc., in Boulder, Colo. "There's a lot of promise there, but the reality [of Web-based management] is still a bit short."

Don't tell that to companies developing Web-based tools, of which there are too many to mention. But of the established players, Cisco Systems, Inc. is arguably the most bullish proponent of Web-based management. Among the start-ups there is NextPoint Networks, Inc., which just began shipping its Web-based service level manager.

Cisco is one of the founders of the Web-based Enterprise Management (WBEM) initiative, a group of vendors seeking to establish Web-based technologies as the underpinning of integrated enterprise management. The group, which also includes Microsoft Corp., Intel Corp., BMC Software, Inc. and Compaq Computer Corp., argues that Internet technologies should be the standard by which management applications run across different platforms and share information.

But WBEM vendors, including Cisco, have acknowledged that the release of WBEM technologies is tightly coupled with Microsoft's release of Windows NT 5.0 (NW, Oct. 20, 1997, page 1). Windows NT 5.0 is slated to ship late this year or early next.

By Jim Duffy

Last week, however, Cisco intimated that it may not wait for Microsoft before shipping WBEM-type tools. "Certainly, the system management vendors are all geared up waiting for the NT 5.0 implementation of [WBEM] to come out," says Jim Turner, manager of network management partnerships at Cisco. "But in other areas, by no means is Microsoft a necessary component."

Cisco last year announced a product called Cisco Resource Manager, a suite of Web-based applications for inventory, software and availability management of Cisco devices. And last fall, Cisco announced a statement of direction for "management intranets and extranets." Web and Internet technologies can be used to tie network management information to other information bases, such as directories; to make that data widely accessible; and to automate device management.

But still, Cisco does not see Web or Internet technologies replacing enterprise management platforms — merely enhancing them.

"A lot of the services that the network management platforms provide are essential services regardless of how you integrate the rest of the elements of the network," Turner says. "All of the original values that the network management frameworks offer are still required and need to be [deployed] in an integrated fashion."

The Web augments platform services by fostering better application scale and interoperability, and by allowing users to customize their consoles regardless of the operating systems on which they run, Turner says. "All of those things complement the original promise of the network management platforms; they don't obsolete it," he says.

NextPoint is a little more aggressive when it comes to the Web/management platform relationship.

"What we have bought into is the Web becomes the platform," says Bill Maro, president of NextPoint. "The Web becomes the way of integrating all of the information and the tools and the access that folks need."

NextPoint this month is shipping NextPoint S3, a Web-based network management system designed to provide network administrators and end users with the information they need to monitor the status of key business applications.

NextPoint S3 consists of Windows NT server software, distributed NT and Solaris agents, and a Java-based user interface. The agents collect network and application response-time metrics, while the server, written in C++, provides an engine for real-

time and historical analysis, as well as alarm and event handling. The Java interface features push technology for automated information distribution and access, and channel buttons for further detail.

But Internet technologies are not a management panacea, Maro acknowledges. Indeed, NextPoint wrote the S3 servers in C++ because of some performance limitations in Java. "We believed C++ was going to give us the best performance on a server," Maro says. "What we liked about Java was the browser, the platform independence and the real-time aspects of it. We decided we could get the best of both worlds by mixing Java and C++."

Maro expects Java to eventually attain server-level performance, but NextPoint is not likely to rewrite its servers. "Because [C++] is operating so well, we haven't even thought about changing the server to Java," he says.

Users agree with Maro's assessment of Java and generally note that Web technologies are limited in enterprise management scope. David Caplan, senior member of the technical staff at GTE Internetworking's technical solutions and deployment department in Cambridge, Mass., is beta-testing NextPoint S3.

"Today, Web-based management is the client side of some management system," Caplan says, though he notes that the portability of a Web interface is "very desirable."

Like Cisco, Caplan believes Internet technologies can enhance enterprise management systems, but not replace them entirely. Java clients, for example, can perform a lot of the data processing on behalf of centralized management servers.

"The management system could just be the repository of raw information, and the applet manipulates that information," Caplan says.

For configuration, individual network devices can have unique URLs that allow users to access network management information

specific to that device.

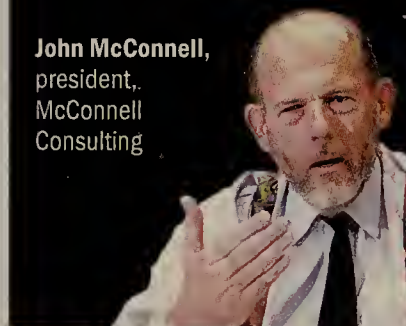
"[Management is] infinitely scalable because your management system is now a loose confederation of all of the devices in your net," Caplan says. "You just have to create a homepage with all of those URLs on it and you're done."

But this still does not address enterprise-level tasks, such as changing a polling policy or a password or a community name, Caplan says.

"It's only a little bit better than telnet," Caplan says, referring to the tedious task of changing each device individually. "That's why I think there will always be the need for a some type of hierarchical enterprise system." ■

"Even though the browser is supposed to be this great uniform way of doing everything, it isn't."

John McConnell,
president,
McConnell
Consulting



THE FOUNDATION OF THE INTERNET'S LARGEST HOME BUILDER



WebFORCE® Origin™ servers from Silicon Graphics. The world's leading Internet solutions for the world's leading Internet Service Providers. Grow as fast as the Internet. Host more customers with less overhead. Do it all while spending less on your Internet server infrastructure and reducing system and network management costs. Only WebFORCE Origin servers can deliver that kind of world record price/performance, scalability, and bandwidth.



Hiway Technologies, home to over 50,000 Internet domains, relies upon the performance, scalability and reliability of WebFORCE Origin servers.

Over 50 WebFORCE Origin servers help handle more than 900 million hits per month with greater than 99.5% uptime, making Hiway the worldwide leader in Web hosting.

If you're serving mail, news, commerce transactions, databases, or caching Web content, look to Origin servers. Join the over 500 ISPs who know there is no better foundation available. We understand your business and have the satisfied customers to prove it. Remember, the Internet is booming. Your business can too, with Silicon Graphics® WebFORCE Origin Servers.

go / web force

at the core of

business



SiliconGraphics

© 1998 Silicon Graphics, Inc. All rights reserved. Silicon Graphics and WebFORCE are registered trademarks, Origin, Origin200, Origin2000, and the Silicon Graphics logo are trademarks of Silicon Graphics, Inc.

Carriers & ISPs

Covering: The Internet • Interexchange and Local Carriers
Wireless • Regulatory Affairs • Voice Equipment

Briefs

■ **Lotus Development Corp.** last week announced that **11 Internet service providers** have signed on to use its *Domino Instant Host Web server* and *Instant Teamroom applications*. Among the ISPs are *America Online, Inc., Netcom On-Line Communication Services, Inc.* and *US WEST, Inc.*

The ISPs plan to offer their customers collaboration application-based services using Lotus' servers and software.

© Lotus: (800) 346-1305

■ Just before the new **toll-free 877 area code** went into effect April 5, the **Federal Communications Commission** dropped a longtime threat to auction toll-free telephone numbers. But the FCC also said it will no longer set aside sequences that spell out vanity numbers (such as 1-800-FLOWERS) in new toll-free area codes for fear of disputes among corporate users. Holders of 800 vanity numbers will have the right of first refusal for the corresponding numbers in the 888 code, the FCC decided, but for 877 and all subsequent toll-free codes those vanity numbers will be fair game.

■ **America Online, Inc. (AOL)** announced it will begin a **digital subscriber line (DSL) trial** in five U.S. cities. AOL said it will be working with *GTE Internetworking* to conduct the trials. The DSL service trials are set for *Birmingham, Ala.; Phoenix; Redmond, Wash.; the San Francisco Bay Area* and *northern Virginia*. Eligible users can sign up for a dedicated DSL connection for \$49.95 per month.

© AOL: (800) 831-4265

■ **Franklin Telecom Corp.** recently announced that its Internet subsidiary **FNet Corp.** will soon offer nationwide telephone-to-telephone IP voice services. FNet also plans to offer its IP voice services overseas.

© FNet: (805) 373-8688

Cisco to promote discounts for school net gear

Company will provide incentives for resellers to offer good deals on Internet access and other network services.

By David Rohde
San Jose, Calif.

Cisco Systems, Inc. has decided to throw its considerable weight behind the federal government's E-rate program, which makes discounted Internet access and other network services available to school districts.

The internetwork equipment giant said it will offer discounts on certain hubs and switches sold through resellers to elementary and secondary schools. Cisco will also offer the resellers extended repayment terms of 90 days to account for potential delays in discount reimbursement from the E-rate administrator, the Washington, D.C.-based Schools and Libraries Corp. (SLC).

Get more online:

- E-rate case studies
- A listing of what's covered under E-rate
- The latest FCC documents and filings

www.nwfusion.com

SLC is administering the E-rate program on behalf of the Federal Communications Commission. In May 1997, the FCC created E-rate — which officially stands for Education Rate — to meet President Clinton's mandate to equip classrooms for Internet access.

Under E-rate, schools that issue competitive bids on SLC's Web site are eligible for discounts on a range of carrier services and customer premise equipment. The discounts range from 20% for schools in the nation's wealthiest communities, to 90% for those in the poorest areas.

The discounts are paid back to carriers, value-added resellers (VAR) or whoever wins each school district's account. The money comes from a \$2.25 billion-per-year pool funded by controversial new universal service fees (NW, March 9, page 29).

In addition to Cisco's discounts, the company is also working to provide information to schools on some confusing aspects of the E-rate program. Some of the confusion stems from an FCC ruling last Dec. 30 — just before the E-rate program went into effect — that said network connections to other schools or district headquarters for internal administrative applications did not meet the criteria for E-rate discounts.

"If you're just building a school district [WAN], that's not covered," said Kevin Warner, Cisco's senior manager for education market development. "There were a number of people screaming over the fact that WANs were not covered when they hoped they would be."

Cisco, in consultation with SLC officials, who have recently allowed some exceptions, is drawing up guidelines clarifying what portion of equipment pur-

chased for multiple applications is deductible, Warner said.

The FCC, Warner added, issued its December ruling to make sure demand for E-rate discounts did not exceed the money available from the new universal service fees.

Another component of Cisco's E-rate program seeks to ensure that schools do not buy network gear that may be difficult for them to maintain. The company is offering larger-than-usual wholesale discounts on its SmartNet Onsite service package to resellers, who can then offer the package at higher margins to school districts.

SmartNet Onsite provides a site-by-site choice of same-day or

next-day delivery of any replacement parts, major software releases and other support services. ■

THE DISCOUNT DERBY

Examples of which equipment and services are eligible for discounts under the FCC's E-rate program for schools:

	YES	NO
Personal computers	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Network interface cards	<input type="checkbox"/>	<input checked="" type="checkbox"/>
File servers	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hubs	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Routers	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Network management systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Maintenance contracts	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Internal IS staff salaries	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Internet access services	<input checked="" type="checkbox"/>	<input type="checkbox"/>
WAN connections to other schools*	<input type="checkbox"/>	<input checked="" type="checkbox"/>

*Some leased lines and access concentration services are eligible for discounts.

SOURCE: SCHOOLS AND LIBRARIES CORP., WASHINGTON, D.C.

AOL targets business users

By Denise Pappalardo
Vienna, Va.

No longer satisfied with its leadership position in the consumer market, America Online, Inc. is targeting business users with AOL Enterprise service.

AOL's recently announced Enterprise virtual private network (VPN) service will let busi-

ness users dial into the Internet, their corporate network and AOL's network from hundreds of points of presence sites around the world.

In order to win business customers, AOL has teamed with a handful of security vendors, including Security Dynamics, Inc. and Check Point Software

Technologies, Ltd. and enterprise leaders such as Lotus Development Corp., to offer a variety of services (see graphic).

But AOL still has an uphill battle ahead, said Dan Merriam, a vice president at the Giga Information Group, a Cambridge, Mass.-based consulting firm. "Business users think of AOL as a consumer company," he said.

Reliability is an even bigger issue as AOL's well-publicized network access woes are still fresh on the minds of many potential users, according to analysts.

AOL executives say those access problems are behind them and claim their network is sound. Last year, AOL spent \$700 million to upgrade the network, which now has a surplus of available ports in a pool of more than 750,000 modems.

AOL Enterprise VPN service is available for \$500 per year, per user with unlimited access. Users can also sign up for a monthly service for \$29.95 plus \$1 per hour.

© AOL: (800) 831-4265

AOL's partnerships

Here are some of the vendors AOL teamed with to unveil AOL Enterprise:

● Aventail Corp.

Aventail VPN policy-based software lets users support 128-bit key encryption, filtering and authentication.

● Check Point Software Technologies, Ltd.

Customers can use a Firewall-1 server.

● Lotus Development Corp.

Lotus Notes users will be able to easily sign up for AOL services based on the companies' integration agreement.

● XcelleNet, Inc.

For remote systems management, network administrators will be able to use the company's RemoteWare platform.



★ Planning for High Speed Token Ring

W



ithout question, the introduction of High Speed Token Ring is the most significant development for Token Ring customers in a decade. This advancement revitalizes Token Ring as a strategic technology on a par with ATM and Gigabit Ethernet. In fact, the unique architectural characteristics of Token Ring will likely make it more effective than Ethernet at speeds of 100Mbit/s, 1 Gigabit, and higher. And, the entire industry is united behind a single IEEE standard for High Speed Token Ring.

Now that the industry's leading networking providers have announced they will ship High Speed Token Ring products later this year, users need to make plans for the implementation of this turbo charged upgrade to their existing Token Ring nets. Large frame sizes, native prioritization, and multiple active paths between switches are among the key attributes that Token Ring brings to the table. Token Ring users can now plan to scale their networks up to 100 Mbit/s and Gigabit speeds without sacrificing these attributes.

Join industry gurus Kevin Tolly, president of The Tolly Group and John Gallant, Editor in Chief of *Network World* in a unique interactive event that will examine High Speed Token Ring and the issues surrounding this exciting new LAN technology. Plan now to attend this **FREE SEMINAR** and learn how High Speed Token Ring can boost your network bandwidth.

BENEFITS OF ATTENDING...

- Discover how to leverage existing investments in Token Ring technology.
- Investigate network design options for integrating High Speed Token Ring in your enterprise network.
- Understand the role of Fast Ethernet and Gigabit Ethernet in heterogeneous networks with High Speed Token Ring.
- Probe top vendor strategists on plans for product rollout, feature sets, and product support.
- Learn how High Speed Token Ring and ATM compliment each other in the Enterprise.
- Learn how unique architectural characteristics of Token Ring provide tangible benefits when scaling to gigabit speeds.

SEMINAR AGENDA...

- | | |
|---------------|---|
| 8:00 - 9:00 | Registration & Continental Breakfast |
| 9:00 - 9:30 | SEGMENT 1 • Level Set |
| 9:30 - 10:30 | SEGMENT 2 • The Decision Drivers |
| 10:30 - 11:00 | Break & Product Information |
| 11:00 - 12:15 | SEGMENT 3 • High Speed Token Ring Strategies |
| 12:15 - 1:30 | Complimentary Lunch |
| 1:30 - 3:00 | SEGMENT 4 • Technical Issues and Options |
| 3:00 - 3:15 | Break & Product Information |
| 3:15 - 4:00 | SEGMENT 5 • The Future |



with Kevin Tolly

T H E
TOLLY
G R O U P

KEVIN TOLLY is President and CEO of The Tolly Group, a strategic consulting, independent testing, and industry analysis organization. He is a leading industry consultant and is responsible for guiding the technology decisions of major vendor and end-user organizations. Tolly writes regularly for *Network World*, and other publications and has been widely quoted in leading business publications such as *Business Week*.



and John Gallant

NetworkWorld

JOHN GALLANT is Editor in Chief of *Network World*, one of the fastest growing publications in the computer/communications industry. With more than 13 years experience covering the industry, Gallant sets the strategic directions for the newsworthy, which serves over 157,000 network IS managers. As senior vice president, Gallant also guides Network World Publishing, Inc's (NWPI) other editorial ventures including *IntraNet*, a magazine focusing on how corporations are using Internet technologies.

NetworkWorld
★ **TOWN** ★
MEETING SM

Planning for
★ **HIGH** ★
SPEED
TOKEN
★ **RING** ★

- APRIL 1, 1998
Chicago, IL • Holiday Inn O'Hare
- APRIL 2, 1998
San Francisco, CA • Sheraton Palace Hotel
- APRIL 21, 1998
New York, NY
New York Marriott Financial Center
- APRIL 22, 1998
Boston, MA • Sheraton Needham
- APRIL 23, 1998
Washington, DC
Georgetown University Conference Center

Sponsored By



Call or visit us on the web to register
(800) 643-4668 • www.nwfusion.com/townmeeting

IP network start-up Level 3 to buy regional carrier

\$165 million acquisition of XCOM Technologies to speed Level 3 Communications' buildout of nationwide public IP service network.

By Tim Greene

Omaha, Neb.

Level 3 Communications, Inc. last week announced it will buy XCOM Technologies, Inc. to advance Level 3's planned nationwide public IP service network.

The \$165 million stock deal will let Level 3 quickly garner customers and obtain the technology the company needs to tie its planned network to the public switched telephone environment.

With the deal, Level 3 will instantly gain the local and regional network XCOM has been building from Massachusetts to Washington, D.C.

"Level 3 can buy customers this way. Let's face it, new competitive carriers

can offer a lower rate voice service to complete calls on and off its network. The Level 3 network could be used just for the long-distance segment of calls

between phones connected to the traditional public phone network.

Crowe said the IP/public network gateway will also support lower cost fax

services and new services being developed. Customers will be able to sign up without adding equipment or changing the way they dial, he said. ■

Here's the deal

Level 3 Communications buys XCOM Technologies:

- **Price:** \$165 million in stock
- **About XCOM:** A competitive local exchange carrier based in Cambridge, Mass., has plans for an IP-based network from Maine to Washington, D.C.
- **About Level 3:** A telecommunications and information services company based in Omaha, Neb., that is building a nationwide, all-fiber IP network; backed by \$3 billion in private financing.
- **Together:** XCOM's live network can be a real-world Level 3 test bed for technology the company might want to use nationwide.

are standing in line waiting to be bought," said Robert Rosenberg, president of Insight Research Corp., a Parsippany, N.J., telecommunications market research firm.

Level 3's goal is to offer low-cost voice and data services over a single IP net based on data network hardware rather than on more expensive telephony equipment.

With that model, Level 3 can offer services at lower prices than established carriers, said James Crowe, Level 3's CEO.

XCOM innovation

To offer phone service over its IP backbone, XCOM needed a way to convert traditional telephone signaling into IP addresses. So XCOM built its own signaling gateway — a workstation and database that performs the conversion and passes on IP signaling information to IP switches.

The gateway technology is now in use in the XCOM network, and hardware vendors, including Ascend Communications, Inc., Cisco Systems, Inc. and 3Com Corp., are working on similar technology for their IP switches.

With an interface between IP addressing and public phone signaling, Level 3

what
ARE YOU GOING TO
TELL YOUR KIDS YOU DID
IN THE IP REVOLUTION
?

Will you tell them it just passed you by because you could never quite get a handle on it? Or that you used Xedia Access Point to leverage the power of the Internet, prioritize bandwidth, reduce costs, and create a platform that you could build on well into the future. Your call. For a white paper on Xedia, check out www.xedia.com or email us at info@xedia.com.

XEDIA
ACCESS THE POWER OF THE INTERNET

1.800.98.XEDIA - WWW.XEDIA.COM

Circle Reader Service #16

WASH MONITOR

The quality-of-service quandary

In our last column we started to list the questions we get asked most frequently by end users about virtual private network services.

A big question that is often asked deals with how quality of service (QoS) will be implemented and how granular it will be. TeleChoice defines QoS as the ability

of a service to define delay, jitter, cell/packet loss ceilings, security and bandwidth on an application-by-application basis. Ideally, you want to be able to strictly define how to route and treat a call. That's QoS.

Unfortunately, the industry is nowhere close to this definition today. QoS offerings are extremely basic. A lot of people

are working to make it better, but no one is totally sure how our ideal will be implemented. Will QoS implementation occur through IPv6? Or through ATM?

To get the skinny on IPv6 we called our friend Mark Miller at DigiNet, who wrote the book "Implementing IPv6."

Miller said the IPv6 packet header has two fields that relate to QoS: Class (8 bits) and Flow Label (20 bits). The Class field is intended to distinguish between different priorities or classes of packets. The Flow Label field is used by a source to label packets that require some special handling, such as real-time service.

However, at this time, definitions for how to use these fields are still under development. And the Internet community is still researching how flows of these packets at Layer 3 relate to flows of frames or cells at Layer 2, and how both of these fields relate to the upper-layer application requirements.

As for ATM, it only defines four classes of service (CoS). Talk about needing more granularity!

This has been our gripe about ATM CoSes since the beginning. None of these four CoSes is very good for real applications — voice or data. This is despite the fact that ATM is supposed to be good at supporting many applications simultaneously.

What is needed is a combination of Unspecified Bit Rate (UBR) and Variable Bit Rate, or UBR and Available Bit Rate. In other words, something cost-effective, with guaranteed minimum bandwidth and sustained bursting capability when bandwidth is available.

But this isn't enough to meet our ideal definition for QoS. Within any given CoS, users need the ability to define dozens of layers, such as prepackaged service contracts, specifying delay, relative and/or absolute priority, discard ratios, etc. Some vendors provide this through proprietary extensions, but that doesn't help outside of a closed network.

The good news is that the Internet Engineering Task Force had another plenary meeting in Los Angeles recently and is working on defining this. (If you want to know what's happening in detail, check out the IPv6 industry Web site for minutes of the IPng Working Group meeting: <http://playground.sun.com/ipng>).

In the short term, you'll see QoS implemented using priority technologies on closed networks, such as a closed IP, frame relay or ATM network.

Briere is president and Heckart is vice president of TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at dbriere@telechoice.com and chuckart@telechoice.com.



Daniel Briere and Christine Heckart

GETS THE DIRT OUT!

CLEANS
and
CONDITIONS
while it
PROTECTS.



UNINTERRUPTIBLE POWER SOLUTIONS For an on-line UPS that provides clean, consistent power, pick up a Powerware® Prestige from Exide Electronics. Its unique design protects critical workstations and network devices. Along with OnliNet® power management software, it enables sophisticated network communication and control. And its wide input voltage range saves batteries for when you need them—during an extended power outage. So accept no substitutes, get genuine power protection today. Within the Americas: 1-800-554-3448, ext. 762, or +1-919-870-3403

Fax: +1-919-870-3411, Internet: <http://www.exide.com>, E-mail: info@exide.com

EXIDE ELECTRONICS
Strategic Power Management™

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

☐ **Yes!** I want to receive/continue to receive my FREE subscription to *Network World*.

☐ No. Thank You.

Do you wish to receive Intranet Magazine FREE? (It will be a monthly publication with content similar to the Intranet supplement within *Network World*.) ☐ Yes ☐ No

Sign Here

Signature (required)

Date

To qualify: You must supply your company name and address. Please Print Clearly.

Name _____ Title _____

Company _____

Street address _____

City _____ State _____ Zip _____

Business phone (_____) _____ Business FAX (_____) _____

Internet e-mail address _____

If there is a parent company, please provide name: _____

If military, please specify branch and base: _____

If government, please specify division: _____

☐ My home address is also my business address.

Optional delivery address:

Enter your home address below if your company will not accept delivery at your business address:

Street address _____ City _____ State _____ Zip _____

Publisher reserves the right to serve only those individuals who meet publication qualifications.

ALL questions must be answered. Incomplete forms will not be processed.

Free subscriptions available to qualified US applicants. Foreign and Canadian rates available upon request.

Form: 9703

What is the principal business activity at your location? (check one only)

- | | |
|---|--|
| 01. <input type="checkbox"/> Manufacturing (other) | 12. <input type="checkbox"/> Government (Federal/State/Local) |
| 02. <input type="checkbox"/> Finance/Banking | 13. <input type="checkbox"/> Military |
| 03. <input type="checkbox"/> Insurance/Real Estate/Legal | 14. <input type="checkbox"/> Aerospace |
| 04. <input type="checkbox"/> Health Care Services | 15. <input type="checkbox"/> Consulting (Independent)* |
| 05. <input type="checkbox"/> Hospitality/Entertainment/Recreation | 16. <input type="checkbox"/> Carriers/Interconnects |
| 06. <input type="checkbox"/> Media/TV/Cable/Radio/Print | 17. <input type="checkbox"/> Internet Service Provider (ISP) |
| 07. <input type="checkbox"/> Retail/Wholesale Trade/Business Services | 18. <input type="checkbox"/> Manufacturing (Computer/Communications/OEM) |
| 08. <input type="checkbox"/> Transportation | 19. <input type="checkbox"/> Resellers of Computer/Network Products (VARs, VADs) |
| 09. <input type="checkbox"/> Utilities | 20. <input type="checkbox"/> Systems/Network Integrators* |
| 10. <input type="checkbox"/> Education | 21. <input type="checkbox"/> Distributors (Computer/Communications)* |
| 11. <input type="checkbox"/> Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry) | 22. <input type="checkbox"/> Other (please specify) _____ |

*Please complete form based on largest client.

2 What is your job function? (check one only)

NETWORK IS MANAGEMENT:

- | | |
|--|---|
| 1. <input type="checkbox"/> Network Management | 6. <input type="checkbox"/> Engineering Management |
| 2. <input type="checkbox"/> LAN Management | 7. <input type="checkbox"/> Corporate Management (CEO, Pres., VP, Dir., Mgr., Financial Management) |
| 3. <input type="checkbox"/> Datacom/Telecom Management | 8. <input type="checkbox"/> Consultant (Independent) |
| 4. <input type="checkbox"/> IS, IT, MIS, CIO, Systems Management | 9. <input type="checkbox"/> Other (please specify) _____ |
| 5. <input type="checkbox"/> Intranet/Intranet Management/Webmaster | |

3 What is the estimated value of Network equipment and services that you specify, recommend or approve the purchase of? (Please print the appropriate number code in the box next to each product category. Please complete ALL categories A-M.)

- | | | |
|-----------------------------------|--|--|
| 9. \$100 Million or More | A <input type="checkbox"/> Large Systems (Mainframes/Minis) | H <input type="checkbox"/> Internet |
| 0. \$50 Million to \$99.9 Million | B <input type="checkbox"/> Desktops (Micro/Laptops/Workstations) | I <input type="checkbox"/> Intranet |
| 2. \$25 Million to \$49.9 Million | C <input type="checkbox"/> Servers | J <input type="checkbox"/> Remote Access |
| 3. \$10 to \$24.9 Million | D <input type="checkbox"/> LANs | K <input type="checkbox"/> Peripherals |
| 4. \$1 to \$9.9 Million | E <input type="checkbox"/> WAN Equipment | L <input type="checkbox"/> Software |
| 5. \$100,000 to \$999,999 | F <input type="checkbox"/> Carrier Services | M <input type="checkbox"/> Service/Support |
| 6. \$50,000 to \$99,999 | G <input type="checkbox"/> Internetworking | |
| 7. Under \$50,000 | | |
| 8. None of the above | | |

4 What is the total number of sites for which you have purchase influence? (check one only)

1. ☐ 100+ 2. ☐ 50 - 99 3. ☐ 20 - 49 4. ☐ 10 - 19 5. ☐ 2 - 9 6. ☐ 1 7. ☐ None

5 What is the total number of Servers/Clients/LANs installed/planned at your location/in your entire organization? (Check one box in each column)

SERVERS		CLIENTS		LANs	
At Location	Entire Org.	At Location	Entire Org.	At Location	Entire Org.
A	B	C	D	E	F
<input type="checkbox"/> 1. 50,000+	<input type="checkbox"/>	<input type="checkbox"/> 1. 50,000+	<input type="checkbox"/>	<input type="checkbox"/> 1. 50,000+	<input type="checkbox"/>
<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>	<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>	<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>
<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>	<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>	<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>
<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>	<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>	<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>
<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>	<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>	<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>
<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>	<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>	<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>
<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>	<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>	<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>
<input type="checkbox"/> 8. none	<input type="checkbox"/>	<input type="checkbox"/> 8. none	<input type="checkbox"/>	<input type="checkbox"/> 8. none	<input type="checkbox"/>

6 What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. Scope (check one only)

1. ☐ Corporate/Enterprise
2. ☐ Department
3. ☐ None

B. Involvement (check ALL that apply)

1. ☐ Create Network Strategy
2. ☐ Recommend/Specify
3. ☐ Approve
4. ☐ Evaluate
5. ☐ Determine the need
6. ☐ None

7 What is the estimated number of employees at your location/in entire organization? (check one in each section)

A. At your location:

- | | |
|---|---|
| 1. <input type="checkbox"/> Over 20,000 | 5. <input type="checkbox"/> 1,000 - 2,499 |
| 2. <input type="checkbox"/> 10,000 - 19,999 | 6. <input type="checkbox"/> 500 - 999 |
| 3. <input type="checkbox"/> 5,000 - 9,999 | 7. <input type="checkbox"/> 499 or less |
| 4. <input type="checkbox"/> 2,500 - 4,999 | |

B. Entire organization:

- | | |
|---|---|
| 1. <input type="checkbox"/> Over 20,000 | 5. <input type="checkbox"/> 1,000 - 2,499 |
| 2. <input type="checkbox"/> 10,000 - 19,999 | 6. <input type="checkbox"/> 500 - 999 |
| 3. <input type="checkbox"/> 5,000 - 9,999 | 7. <input type="checkbox"/> 499 or less |
| 4. <input type="checkbox"/> 2,500 - 4,999 | |

8 Please indicate the products/services that you are currently involved in purchasing or plan to purchase: (Check ALL that apply)

A. Currently involved in purchasing

B. Plan to purchase

INTERNET/INTRANET

- | | |
|------------------------------|---|
| <input type="checkbox"/> 01. | <input type="checkbox"/> Internet Services |
| <input type="checkbox"/> 02. | <input type="checkbox"/> Firewalls/Security/Encryption |
| <input type="checkbox"/> 03. | <input type="checkbox"/> Internet Web Servers |
| <input type="checkbox"/> 04. | <input type="checkbox"/> Intranet Web Servers |
| <input type="checkbox"/> 05. | <input type="checkbox"/> TCP/IP Software |
| <input type="checkbox"/> 06. | <input type="checkbox"/> Management/Monitoring Software |
| <input type="checkbox"/> 07. | <input type="checkbox"/> Push Technology |
| <input type="checkbox"/> 08. | <input type="checkbox"/> Web Browsers |
| <input type="checkbox"/> 09. | <input type="checkbox"/> Intranet Applications/Groupware |
| <input type="checkbox"/> 10. | <input type="checkbox"/> Search/Retrieval Products (web crawler) |
| <input type="checkbox"/> 11. | <input type="checkbox"/> Internet Development Tools (JAVA, ActiveX, etc.) |
| <input type="checkbox"/> 12. | <input type="checkbox"/> Electronic Commerce Tools |
| <input type="checkbox"/> 13. | <input type="checkbox"/> Internet Telephony |

LOCAL-AREA NETWORKS

- | | |
|------------------------------|--|
| <input type="checkbox"/> 14. | <input type="checkbox"/> Local-Area Networks |
| <input type="checkbox"/> 15. | <input type="checkbox"/> Network Operating System Software |
| <input type="checkbox"/> 16. | <input type="checkbox"/> Servers |
| <input type="checkbox"/> 17. | <input type="checkbox"/> Print Servers |
| <input type="checkbox"/> 18. | <input type="checkbox"/> ATM Switches |
| <input type="checkbox"/> 19. | <input type="checkbox"/> Token-Ring Switches |
| <input type="checkbox"/> 20. | <input type="checkbox"/> Ethernet Switches |
| <input type="checkbox"/> 21. | <input type="checkbox"/> Fast Ethernet |
| <input type="checkbox"/> 22. | <input type="checkbox"/> Gigabit Ethernet |
| <input type="checkbox"/> 23. | <input type="checkbox"/> IP Switches |
| <input type="checkbox"/> 24. | <input type="checkbox"/> LAN Storage/Backup |
| <input type="checkbox"/> 25. | <input type="checkbox"/> Optical LAN Storage/Backup |
| <input type="checkbox"/> 26. | <input type="checkbox"/> Disk LAN Storage/Backup |
| <input type="checkbox"/> 27. | <input type="checkbox"/> Tape LAN Storage/Backup |
| <input type="checkbox"/> 28. | <input type="checkbox"/> RAID LAN Storage/Backup |
| <input type="checkbox"/> 29. | <input type="checkbox"/> Network Test/Diagnostic Tools |
| <input type="checkbox"/> 30. | <input type="checkbox"/> Cables, Connectors, Baluns |
| <input type="checkbox"/> 31. | <input type="checkbox"/> UPS |
| <input type="checkbox"/> 32. | <input type="checkbox"/> Network Interface Cards |
| <input type="checkbox"/> 33. | <input type="checkbox"/> SNMP Network Management |

INTERNETWORKING

- | | |
|------------------------------|--|
| <input type="checkbox"/> 34. | <input type="checkbox"/> Routers |
| <input type="checkbox"/> 35. | <input type="checkbox"/> Hubs |
| <input type="checkbox"/> 36. | <input type="checkbox"/> Intelligent Hubs |
| <input type="checkbox"/> 37. | <input type="checkbox"/> Stackable Hubs |
| <input type="checkbox"/> 38. | <input type="checkbox"/> Bridge/Router |
| <input type="checkbox"/> 39. | <input type="checkbox"/> Bridges |
| <input type="checkbox"/> 40. | <input type="checkbox"/> Gateways |
| <input type="checkbox"/> 41. | <input type="checkbox"/> Concentrators/Repeaters |

COMPUTERS/PERIPHERALS

- | | |
|------------------------------|---|
| <input type="checkbox"/> 42. | <input type="checkbox"/> Network Computers |
| <input type="checkbox"/> 43. | <input type="checkbox"/> Laptops/Notebooks/Sub-Notebooks |
| <input type="checkbox"/> 44. | <input type="checkbox"/> Micros/PCs |
| <input type="checkbox"/> 45. | <input type="checkbox"/> Minis |
| <input type="checkbox"/> 46. | <input type="checkbox"/> Mainframes |
| <input type="checkbox"/> 47. | <input type="checkbox"/> Workstations |
| <input type="checkbox"/> 48. | <input type="checkbox"/> Printers/Network Printers |
| <input type="checkbox"/> 49. | <input type="checkbox"/> CD-ROM |
| <input type="checkbox"/> 50. | <input type="checkbox"/> Fax/Modem Boards |
| <input type="checkbox"/> 51. | <input type="checkbox"/> Graphics/Multimedia/Audio/Video Boards |
| <input type="checkbox"/> 52. | <input type="checkbox"/> Memory/Chips/Boards/Cards |

REMOTE/WIRELESS COMPUTING

- | | |
|------------------------------|--|
| <input type="checkbox"/> 53. | <input type="checkbox"/> Remote Access Products |
| <input type="checkbox"/> 54. | <input type="checkbox"/> Remote Access Services |
| <input type="checkbox"/> 55. | <input type="checkbox"/> PDAs |
| <input type="checkbox"/> 56. | <input type="checkbox"/> PCMCIA Devices |
| <input type="checkbox"/> 57. | <input type="checkbox"/> Wireless Data Services |
| <input type="checkbox"/> 58. | <input type="checkbox"/> Wireless Data Equipment |
| <input type="checkbox"/> 59. | <input type="checkbox"/> Cellular Equipment & Services |

SOFTWARE/APPLICATIONS

- | | |
|------------------------------|---|
| <input type="checkbox"/> 60. | <input type="checkbox"/> Network Management |
| <input type="checkbox"/> 61. | <input type="checkbox"/> Systems Management |
| <input type="checkbox"/> 62. | <input type="checkbox"/> Security |
| <input type="checkbox"/> 63. | <input type="checkbox"/> Communications Software |
| <input type="checkbox"/> 64. | <input type="checkbox"/> Terminal Emulation |
| <input type="checkbox"/> 65. | <input type="checkbox"/> Operating Systems |
| <input type="checkbox"/> 66. | <input type="checkbox"/> Applications Development Tools |
| <input type="checkbox"/> 67. | <input type="checkbox"/> Database Management/RDBMS |
| <input type="checkbox"/> 68. | <input type="checkbox"/> Groupware |
| <input type="checkbox"/> 69. | <input type="checkbox"/> Workflow |
| <input type="checkbox"/> 70. | <input type="checkbox"/> EDI |
| <input type="checkbox"/> 71. | <input type="checkbox"/> E-mail |
| <input type="checkbox"/> 72. | <input type="checkbox"/> Desktop Video Conferencing |
| <input type="checkbox"/> 73. | <input type="checkbox"/> Imaging |
| <input type="checkbox"/> 74. | <input type="checkbox"/> Suites/Server Suites (Back Office, etc.) |
| <input type="checkbox"/> 75. | <input type="checkbox"/> Middleware |
| <input type="checkbox"/> 76. | <input type="checkbox"/> Document Management |
| <input type="checkbox"/> 77. | <input type="checkbox"/> Site Metering Tools |
| <input type="checkbox"/> 78. | <input type="checkbox"/> Computer Telephony Integration (CTI) |
| <input type="checkbox"/> 79. | <input type="checkbox"/> Data Warehousing |

WIDE-AREA NETWORK EQUIPMENT & SERVICES

- | | |
|------------------------------|---|
| <input type="checkbox"/> 80. | <input type="checkbox"/> Modems |
| <input type="checkbox"/> 81. | <input type="checkbox"/> Asynchronous Transfer Mode (ATM) |
| <input type="checkbox"/> 82. | <input type="checkbox"/> Frame Relay Equipment/Services |
| <input type="checkbox"/> 83. | <input type="checkbox"/> ISDN Equipment & Services |
| <input type="checkbox"/> 84. | <input type="checkbox"/> FT-1/T-1/T-3 Multiplexers/Services |
| <input type="checkbox"/> 85. | <input type="checkbox"/> DSL Services/Products |
| <input type="checkbox"/> 86. | <input type="checkbox"/> SONET |
| <input type="checkbox"/> 87. | <input type="checkbox"/> Inverse Multiplexers |
| <input type="checkbox"/> 88. | <input type="checkbox"/> SMDS |
| <input type="checkbox"/> 89. | <input type="checkbox"/> Diagnostic/Test Equipment |
| <input type="checkbox"/> 90. | <input type="checkbox"/> DSU/CSU |
| <input type="checkbox"/> 91. | <input type="checkbox"/> VSAT/Satellite |
| <input type="checkbox"/> 92. | <input type="checkbox"/> PBXs |
| <input type="checkbox"/> 93. | <input type="checkbox"/> Voice Mail/Response |
| <input type="checkbox"/> 94. | <input type="checkbox"/> Videoconferencing |
| <input type="checkbox"/> 95. | <input type="checkbox"/> Leased Lines |
| <input type="checkbox"/> 96. | <input type="checkbox"/> Switched Data |
| <input type="checkbox"/> 97. | <input type="checkbox"/> Virtual Networks |
| <input type="checkbox"/> 98. | <input type="checkbox"/> Outsourcing/Systems Integration Services |
| <input type="checkbox"/> 99. | <input type="checkbox"/> Education/Training Services |

- ☐ 00. ☐ None of the above (1 - 99)

9 Please indicate the platforms that are currently installed/planned:

(Check ALL that apply)

A. Currently installed

B. Planned for purchase

NETWORK PROTOCOLS

- | | |
|------------------------------|---|
| <input type="checkbox"/> 01. | <input type="checkbox"/> TCP/IP |
| <input type="checkbox"/> 02. | <input type="checkbox"/> IPv6 |
| <input type="checkbox"/> 03. | <input type="checkbox"/> SNA |
| <input type="checkbox"/> 04. | <input type="checkbox"/> DECnet |
| <input type="checkbox"/> 05. | <input type="checkbox"/> Novell IPX/SPX |
| <input type="checkbox"/> 06. | <input type="checkbox"/> APPC/APPN/LLU 6.2 |
| <input type="checkbox"/> 07. | <input type="checkbox"/> NETBIOS |
| <input type="checkbox"/> 08. | <input type="checkbox"/> AppleTalk |
| <input type="checkbox"/> 09. | <input type="checkbox"/> NFS |
| <input type="checkbox"/> 10. | <input type="checkbox"/> Other (please specify) _____ |

LAN ENVIRONMENT

- | | |
|------------------------------|---|
| <input type="checkbox"/> 11. | <input type="checkbox"/> Gigabit Ethernet |
| <input type="checkbox"/> 12. | <input type="checkbox"/> Switched Ethernet |
| <input type="checkbox"/> 13. | <input type="checkbox"/> Fast Ethernet (100 Megabit Ethernet) |
| <input type="checkbox"/> 14. | <input type="checkbox"/> Ethernet |
| <input type="checkbox"/> 15. | <input type="checkbox"/> ATM |
| <input type="checkbox"/> 16. | <input type="checkbox"/> Token Ring/Token Ring Switching |
| <input type="checkbox"/> 17. | <input type="checkbox"/> IP Switching |
| <input type="checkbox"/> 18. | <input type="checkbox"/> FDDI |
| <input type="checkbox"/> 19. | <input type="checkbox"/> 100Base-T |
| <input type="checkbox"/> 20. | <input type="checkbox"/> 10Base-T |
| <input type="checkbox"/> 21. | <input type="checkbox"/> LocalTalk |
| <input type="checkbox"/> 22. | <input type="checkbox"/> Fibre Channel |
| <input type="checkbox"/> 23. | <input type="checkbox"/> 100vg Any LAN |
| <input type="checkbox"/> 24. | <input type="checkbox"/> Other (please specify) _____ |

NETWORK OPERATING SYSTEM

- | | |
|------------------------------|---|
| <input type="checkbox"/> 25. | <input type="checkbox"/> Windows NT |
| <input type="checkbox"/> 26. | <input type="checkbox"/> Windows NT/Advanced Server |
| <input type="checkbox"/> 27. | <input type="checkbox"/> Novell IntranetWare |
| <input type="checkbox"/> 28. | <input type="checkbox"/> Novell (NetWare 4.X) |
| <input type="checkbox"/> 29. | <input type="checkbox"/> Novell (NetWare 2.X, 3.X) |
| <input type="checkbox"/> 30. | <input type="checkbox"/> Microsoft (LAN Manager) |
| <input type="checkbox"/> 31. | <input type="checkbox"/> LocalTalk (AppleTalk) |
| <input type="checkbox"/> 32. | <input type="checkbox"/> Banyan (VINES) |
| <input type="checkbox"/> 33. | <input type="checkbox"/> IBM (LAN Server) |
| <input type="checkbox"/> 34. | <input type="checkbox"/> Artisoft (LANtastic) |
| <input type="checkbox"/> 35. | <input type="checkbox"/> Other (please specify) _____ |

COMPUTER OPERATING SYSTEM

- | | |
|------------------------------|---|
| <input type="checkbox"/> 36. | <input type="checkbox"/> NT Server |
| <input type="checkbox"/> 37. | <input type="checkbox"/> NT Workstation |
| <input type="checkbox"/> 38. | <input type="checkbox"/> Unix/Xenix/AIX |
| <input type="checkbox"/> 39. | <input type="checkbox"/> Solaris |
| <input type="checkbox"/> 40. | <input type="checkbox"/> Windows |
| <input type="checkbox"/> 41. | <input type="checkbox"/> Windows 95 |
| <input type="checkbox"/> 42. | <input type="checkbox"/> Windows 97 |
| <input type="checkbox"/> 43. | <input type="checkbox"/> DOS |
| <input type="checkbox"/> 44. | <input type="checkbox"/> OS/2/OS/2 Warp |
| <input type="checkbox"/> 45. | <input type="checkbox"/> IBM MVS/VM/VSE |
| <input type="checkbox"/> 46. | <input type="checkbox"/> Digital VMS |
| <input type="checkbox"/> 47. | <input type="checkbox"/> Macintosh |
| <input type="checkbox"/> 48. | <input type="checkbox"/> Other (please specify) _____ |

- ☐ 49. ☐ None of the above (1-48)

10 Which of the following Servers/Clients do you have installed/planned at your location? (check ALL that apply in each column)

	A. Servers		B. Clients			A. Servers		B. Clients	
Power PC	<input type="checkbox"/>	01.	<input type="checkbox"/>		486	<input type="checkbox"/>	07.	<input type="checkbox"/>	
Power Mac	<input type="checkbox"/>	02.	<input type="checkbox"/>		386	<input type="checkbox"/>	08.	<input type="checkbox"/>	
Mac Other	<input type="checkbox"/>	03.	<input type="checkbox"/>		286	<input type="checkbox"/>	09.	<input type="checkbox"/>	
Multiprocessor Servers	<input type="checkbox"/>	04.	<input type="checkbox"/>		Rise	<input type="checkbox"/>	10.	<input type="checkbox"/>	
PG/PII	<input type="checkbox"/>	05.	<input type="checkbox"/>		Alpha	<input type="checkbox"/>	11.	<input type="checkbox"/>	
Pentium/Pentium Pro	<input type="checkbox"/>	06.	<input type="checkbox"/>		Other	<input type="checkbox"/>	12.	<input type="checkbox"/>	

Please indicate the names and job functions of other individuals at your location to whom you would like us to send a copy of **NetworkWorld**.

Name _____	Job Function _____
Name _____	Job Function _____
Name _____	Job Function _____
Name _____	Job Function _____
Name _____	Job Function _____
Name _____	Job Function _____
Name _____	Job Function _____

Visit our Web Information Service, *Network World Fusion*TM
and apply on-line at <http://www.nwfusion.com>

1. FOLD HERE & MAIL TODAY



3. PLEASE TAPE HERE

2. FOLD HERE & MAIL TODAY



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO 1752 NORTHBROOK IL

POSTAGE WILL BE PAID BY ADDRESSEE

Network World

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

PO BOX 3091

NORTHBROOK IL 60065-9928

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



Intranet Applications

Covering: Messaging • Groupware • Databases
Multimedia • Electronic Commerce • Security

Briefs

■ **Santa Clara, Calif.-based start-up NetScreen Technologies, Inc.** later this month will ship a hardware-based **firewall** for use



in 10M bit/sec or 100M bit/sec LANs. The \$9,995 NetScreen-100 Secure Packet Processor can support 3,200 simultaneous sessions and offers load balancing, bandwidth prioritization and the IP Security encryption standard.

© NetScreen: (408) 970-8889

■ **Net-IT Software Corp.** last week shipped Net-IT Central 2.5, a server-based product that lets corporations automatically **publish documents to their intranets**. The latest version of Net-IT Central can run as a service on NT and can be controlled using Windows NT Server Manager.

© Net-IT: (415) 551-0646

■ **Fremont, Calif.-based start-up Internet Tools, Inc.** this month will ship **ID-Trak**, an NT-based intrusion detection engine that can detect over 200 different types of attacks on the corporate intranet. The ID-Trak sensor, which starts at \$3,500, is intended to be placed in segments of the corporate LAN where important data is processed.

© Internet Tools: (510) 505-7835

■ **Open Text Corp.**, of Waterloo, Ontario, last week announced **Livelink Intranet 8**, the company's Web-based **collaboration and knowledge management software**. A new modular architecture allows Livelink's core services to be augmented with multiview workspaces, a tool for monitoring the progress of projects and Java-based workflow capabilities. Scheduled to ship next month, Livelink prices range from \$100 to \$850 per user depending on volumes.

© Open Text: (519) 888-7111

Feds do e-commerce the hard way

By Ellen Messmer
Orlando

Within three years, the White House wants all government purchasing to be done electronically. But if today's state of affairs is any indication, it may take a lot longer than that.

In fact, small and mid-size businesses are already giving up selling opportunities because conducting electronic commerce with the government is too complicated and disjointed. Ever since last fall, when the government gave up on a single electronic commerce initiative, the electronic data interchange

(EDI)-based Federal Acquisition Commerce Network (FACNET) agencies have all been going their own way.

Despite the three-year commerce goal, government electronic commerce mandates are already coming. For instance, by June 1, all suppliers that want to do business with the Department of Defense will have to be registered in the official contractor registration database for electronic commerce.

"It's complete chaos — someone has got to take control," said John Pendrak, a consultant at the Electronic Commerce Resource Center in Atlanta, one of 16 government funded centers around the country whose job is to help government contractors get registered and active in electronic commerce programs. "You should see what these agencies are handing to the small businesses. And they're responding, 'It just isn't worth it.'"

FACNET had required that certain EDI transaction sets be used for purchase orders and

bids. But now that no one has to follow any rules, anything goes.

The U.S. Tank-Automotive & Armaments Command (TACOM), for example, has

recently confounded the electronic commerce resource centers, places where companies can register as government contractors, when it demanded government suppliers use an EDI transaction set of which no one was aware.

"It turned out that this 989

THE FEDERAL GOVERNMENT: ONE BIG SPENDER

Purchase size	Number of annual purchases (in millions)	Total amount spent (in billions)
Under \$2,500	13.2	\$5.3
\$2,500 to \$25,000	8.3	\$16.6
Over \$25,000	0.4	\$178.6
Total:	21.9	\$200.5

Figures shown are the most recent available, which are for 1996 spending.

SOURCE: PRESIDENT'S MANAGEMENT COUNCIL'S "REPORT OF THE ELECTRONIC PROCESSES INITIATIVE COMMITTEE"

developed its own EDI gateway, "so you don't have to go through FACNET," said electronic commerce/EDI program manager Pat Dempsey-Klott.

In other cases, things are even more confusing. Instead of using real EDI that lets you map data into back-end business systems, some U.S. Air Force bases wrap faxes for purchase acknowledgments in EDI envelopes.

The Defense Supply Center

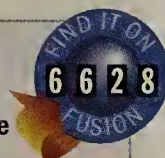
transaction set was a standard they had proposed in the late 1980s, but it was never implemented as a standard," Pendrak said. "But now they decided, hey, it's a good time to use it."

In addition, agencies are moving rapidly to post up Web-based electronic catalogues so government employees can buy directly off the World Wide Web using procurement cards. While this

See EC problems, page 32

Get more online:

- A copy of the entire report
- A look at how the Web made a federal EDI network obsolete



www.nwfusion.com

Partners jockey for position

Microsoft preferred vendor claims spark controversy.

By Paul McNamara

Now that more than 10 million customers are accessing machines running Microsoft Exchange Server, a growing number of independent software vendors are scrambling to provide complementary software.

And elbows are flying with some of the 256 Exchange supporters attempting to portray their companies and products as the most in sync with Microsoft Corp.

For its part, Microsoft insists a level playing field exists for all Exchange partners and urges customers to be wary of claims to the contrary. But Microsoft's purported stamp of approval has become the subject of debate among some partners, particularly those in the workflow applications market.

"The biggest challenge we face is keeping the other guys

honest [about their real] relationship with Microsoft," said Roger Sullivan, vice president of marketing at Keyfile Corp., in Nashua, N.H. "There is one notable vendor that seems to be claiming essentially a preferred status with Microsoft."

According to Keyfile, that

vendor is Eastman Software, Inc., although Eastman denies doing anything out of bounds. When Eastman was part of Wang Laboratories, Inc., it did have a contractual agreement with Microsoft to be the software giant's "preferred" imaging and workflow vendor, but Eastman officials said that pact has since expired.

Today, Eastman continues to tout its relationship with Microsoft as a major selling point, noting that Eastman's engineers are helping to develop Windows NT 5.0. "We're the only vendor that Microsoft ships products [from] under its brand to its customers," said Michael Loria, Eastman's vice president of marketing. Microsoft ships Eastman's Imaging for Windows program with Windows 95 and Windows NT Desktop, he said.

"The only reason this matters at all is that cus-

tomers want to buy products from a company that they think is in sync with Microsoft," Loria said. "We don't even bring up this preferred thing" as a standard marketing pitch, he claimed. However, he conceded Eastman's relationship with Microsoft could surface in "what a sales rep says to a customer in the heat of closing a deal."

Stan Sorensen, an Exchange product manager, said Eastman had to be asked to tone down its "preferred partner" claims in the past. "When Eastman talks about this stuff, it sort of sounds like an official designation, which it is not," Sorensen said.

One industry analyst, Gerry Murray of International Data Corp., in Framingham, Mass., said vendors would be well advised to focus more on products than on partnerships.

"The idea that each of these guys is going to go around quibbling about who is best friends with Microsoft is the most pitiful, ridiculous waste of time," Murray said. ■

Latching onto Exchange

Companies offering workflow products that run atop Microsoft Exchange Server include:

- **Eastman Software, Inc.**
WorkFolder for Microsoft Exchange
- **FrontOffice Technologies, Inc.**
FrontOffice for Microsoft Exchange
- **JetForm Corp.**
InTempo
- **Keyfile Corp.**
Keyflow 3.0



INSIDER

How are they going to do that?

Speculation is rampant that lawmakers in Washington, D.C. are going to engage in another round of technologically atheistic rule-making for the Internet.

Every now and then Congress or some federal government department decides

to create laws or regulatory rules based on how these organizations wish technology worked rather than on how technology actually works. More than a little bit of this

thinking went into the Communications Decency Act, which the Supreme Court struck down last year. There is also a heavy dose of this thinking behind some new attempts to make Internet service providers responsible for the content of the traffic they carry.

The current speculation that new 'Net rules are on the way is based on a leaked

draft of a Federal Communications Commission report to Congress about ISPs and the universal service fund. The draft reportedly recommends that black-phone-to-black-phone trunk calls placed on the Internet should be subject to universal service fees. Some reports also say that all 'Net-based telephony could become susceptible to such fees.

Rules such as these might seem easy to write, but what would they actually mean? What could the fee structure be? And how could these rules possibly be enforced?

The Internet is a transmission structure for packets. The 'Net's function is to accept a packet from one computer and deliver that packet to another computer. Fields in each packet define "ports" that are used to let the receiving computer know which application should process each packet.

The Internet Engineering Task Force (IETF) has defined which port numbers correspond to many applications but has left most of the port numbers open. As long as a pair of computers does not use numbers that have already been assigned,

the computers can use any port numbers for anything both ends agree to. This flexibility is part of the Internet's basic strength — the 'Net permits unfettered experimentation with new applications.

The same flexibility means that even those port numbers assigned by the IETF can be ignored if the two computers agree on a new port number for a specific application. It does not take much imagination to see that if there is some sort of special fee for the use of IP telephony, people would quickly start using nonassigned port numbers and there would be no way for an ISP to even know that IP telephony was going on.

It is also hard to understand how fees could be determined for any Internet site with a nondial-up connection. What fee would be assigned to my cable TV-based T-1 Internet connection if I used IP telephony for an average of five minutes a day, or to Harvard's T-3 connection if a hundred students were to use IP telephony from time to time to reduce their phone bills?

In the past, good rules were not altered in Washington, D.C. just because of technical reality. It will be interesting to see if the lure of taxable 'Net applications means that this will be true yet again.

Disclaimer: Harvard sends piles of

money to phone companies and could be interested in alternatives, but the above reality check is my own.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

EC problems

Continued from page 31

certainly will spur electronic commerce in the long run, businesses that want to sell to the government are unsure about how to get in on the action.

Government officials trying to manage the post-FACNET era admitted there are problems now, but they promised that life will get better.

According to Paul Grant, co-chairman of the Federal Electronic Commerce Program Office, the government intends to put up a Web site, called Commerce Business Daily Plus (CBD+). CBD+ will display every agency solicitation, uploaded fresh every day, from all the agencies.

However, the CBD+ Web site, which would provide a central view of agency procurement activity, probably won't be finished until year-end. ■

Finally, A Remote Router Designed For The Non-Propeller-Heads Among Us.



ROUTERmate™ Plus - Routers with Built-in CSUs. **Technology without Technicalities.**

Finally, a router simply designed to be...well, simple. Simple to install. Simple to use. With ROUTERmate Plus's integral CSU/DSU, just plug it in. An intuitive menu-driven interface does the rest.



Of course, while there's less stuff outside, nothing's left-out inside. ROUTERmate Plus's 10Base-T LAN interface supports IP, IPX routing, bridging of other protocols, and in-band or out-of-band management. Its WAN interface connects directly to your 56K DDS or T1/fractional T1 service. DES encryption and an integral management modem are available as options.

ROUTERmate Plus is not only easy to use, it's also easy on the wallet. Starting at just \$995, ROUTERmate Plus offers exceptionally high performance at an incredible low price. All with an equally impressive 5-Year Warranty.

So give your remote offices the technology, without the technicalities, with ROUTERmate Plus. For more information, call Osicom toll free at 1-888-OSICOM-8 (1-888-674-2668).

Meet the entire ROUTERmate family.

Product	Integral WAN	Interface	Telnet & SNMP	Price	Warranty
ROUTERS					
ROUTERmate-EX	V.35, RS-530, RS-232, X.21	10BaseT	via Router	\$895	5-year
ROUTERmate Plus-56	56K CSU/DSU	10BaseT	via Router	\$995	5-year
ROUTERmate Plus-T1	T1 CSU/DSU	10BaseT	via Router	\$1,495	5-year
ROUTERmate Plus-D&I	T1 CSU/DSU	10BaseT	via Router	\$1,795	5-year
CSU/DSUs					
ROUTERmate-56	56K CSU/DSU	V.35	via SLIP	\$595	5-year
ROUTERmate-T1	T1 CSU/DSU	V.35	via SLIP	\$995	5-year
ROUTERmate-D&I	T1 CSU/DSU	V.35+T1	via SLIP	\$1,295	5-year
ROUTERmate-D&I&M	T1 CSU/DSU	V.35+T1	via SLIP	\$1,595	5-year
ISDN TERMINAL ADAPTERS					
ROUTERmate-TA	ISDN BRI + NT1	V.35	via SLIP	\$595	5-year

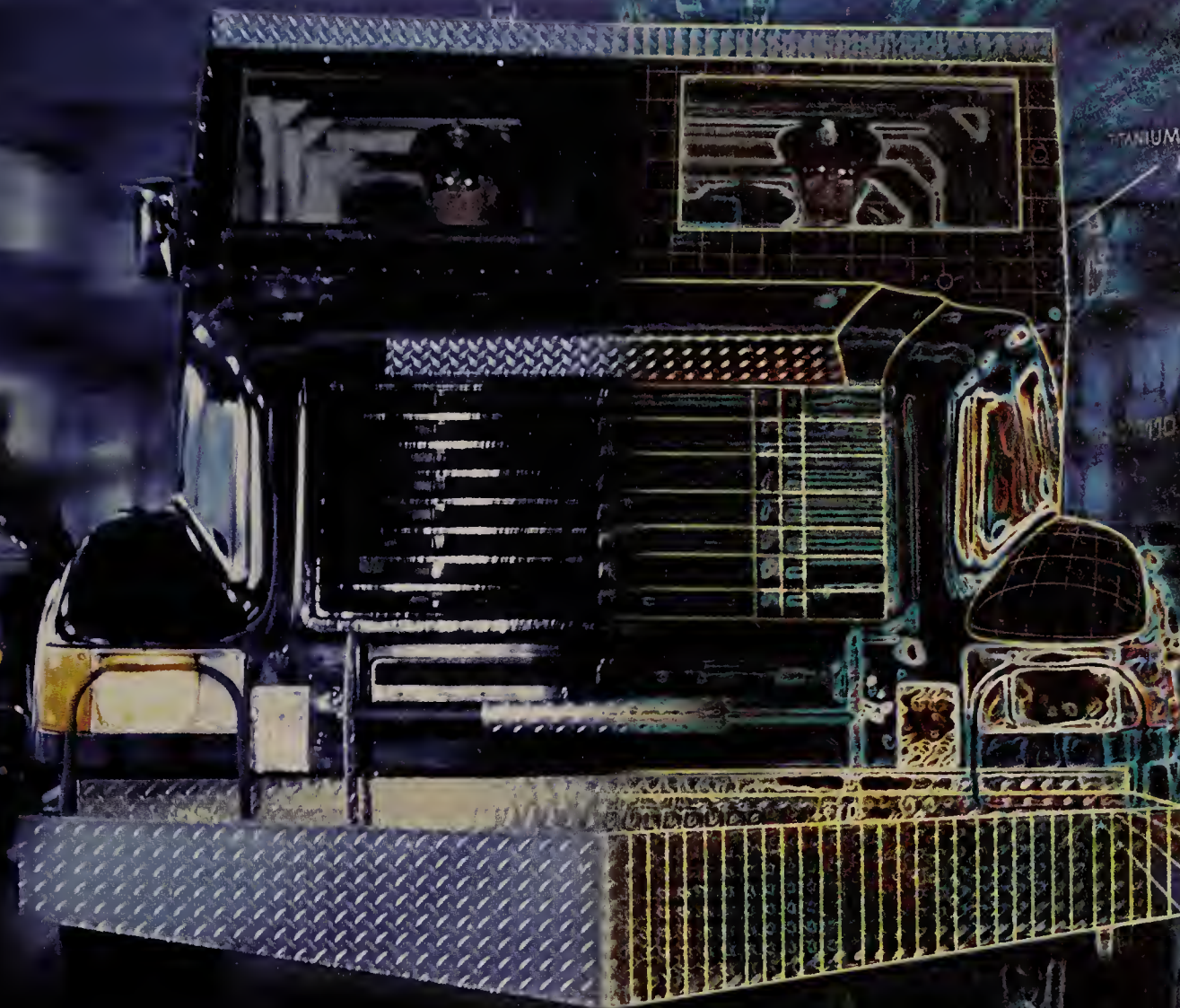


Osicom Technologies, Inc.
9020 Junction Drive
Annapolis Junction, MD 20701
888-OSICOM-8
(301) 317-7527
Fax: (301) 317-7535
info@osicom.com
www.osicom.com



You see dependability

We see the Internet



TITANIUM ARMOR
PLATING

HIGH VOLTAGE
SECURITY
MATRIX

For the utmost in reliable, secure IP solutions, Sprint delivers.

With Sprint's portfolio of dependable IP services, your business can take full advantage of the Internet. We offer both intranet and security services, dial up and dedicated access, plus a patent-pending Web hosting service with site mirroring architecture that guarantees 100% availability.* So you can connect, transact and share information with customers, suppliers and employees with confidence—all backed by our industry-leading performance guarantees.

Business runs on data. And data runs on Sprint. www.sprint.com/data1 1-800-588-DATA



We help your business do more businessSM

©1998 Sprint Communications Company L.P. *Sprint will credit up to 50% of the MRC if site is not available. Site availability is the successful delivery of content to any user that can reach the site. Certain restrictions apply. Contact your Sprint representative for details.



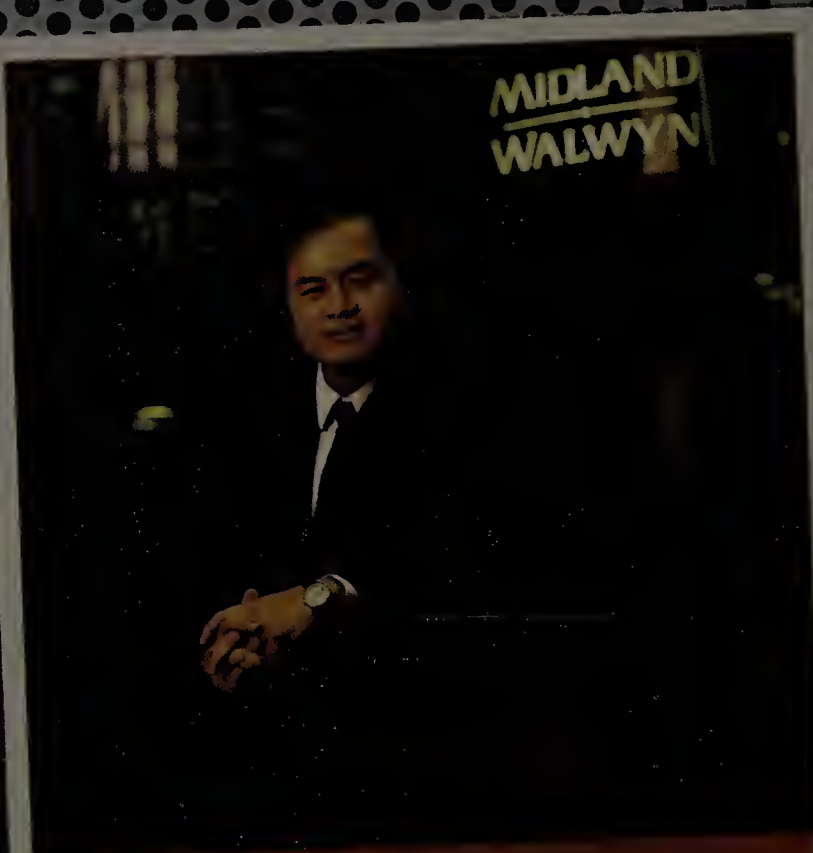
e-business

The IBM home page is located at www.ibm.com. IBM, Solutions for a small planet, the e-business logo and other marks designated * or ™ are trademarks of International Business Machines Corp. in the U.S. and/or other countries. Lotus and Domino are trademarks of Lotus Development Corporation in



GALERIES LaFAYETTE
Sebastien Cich

With DB2® Universal Database, M. Cich can show customers any furniture item in any fabric and close the sale with an exact delivery date – via DB2's links with supplier and distributor databases.



MIDLAND WALWYN
Bill Tran

With Tivoli® Systems management software, one of Canada's top investment firms now manages IT assets across different server environments as easily as if they were all one portfolio.



J.B. HUNT TRANSPORT
Denise Simmons

The flexibility of DB2 helps Ms. Simmons' team analyze financial data as never before, to manage costs and help the sales force secure more contracts in a price-sensitive industry.

Platform by Microsoft. Business results by IBM. Obviously, we're not the only ones who can make Microsoft® Windows NT® work. What we do best is make it pay. Our software building blocks include everything you need to create, deploy and manage the new apps you're counting on for a business edge. The "back room" functions



Forget winners and losers

I hate getting caught up in the “battles” staged by competing technology camps—NT vs. NetWare, Internet Explorer vs. Navigator, Gigabit Ethernet vs. ATM. But we’re as guilty as the next company or analyst who engages in this zero-sum competition. Too often, our stories focus on which product is “winning” in the marketplace and not on what customers need.

I was vividly reminded of that during the first two of five planned Network World Town Meetings on High-Speed Token Ring (HSTR).

You’ve probably read about HSTR by now. Last summer, in a meeting co-sponsored by The Tolly Group, we brought together the leading companies to discuss the future of token ring. At the time, the companies committed to developing a 100M bit/sec version of the venerable technology as a migration path for current customers.

Since then, cohesion has weakened among the vendors. Players such as IBM, Madge and Olicom are talking about deliverable products, but others have been largely mum, and one major player, Cisco, has decided not to do HSTR (though it remains committed to token-ring switching).

News of the HSTR effort sparked sharp words by analysts and others who feel that token ring ought to be headed for the junk heap. Why, they asked, were we perpetuating the myth that token ring was still strategic and a viable competitor to Ethernet?

The answer could easily be found among the 170 or so customers at the Town Meetings. Network managers from banks, insurance companies and other organizations were there to learn how to move their networks forward. They want to extend their investments in token ring while maintaining the flexibility to adopt other technologies.

They weren’t there to discuss winners and losers because their networks aren’t new, green-field installations. A purely theoretical debate on the merits of Fast Ethernet vs. HSTR is of limited value to them.

Is token ring strategic again? To some of those customers, HSTR will be strategic. Others may decide to embrace an alternative, such as ATM or Fast Ethernet. Some of the vendors will see HSTR as a profit opportunity and may push it as more than just a replacement option. Others, like Cisco, may decide it isn’t worth the R&D investment.

And everyone will be right. Or wrong, depending on how well they’ve analyzed their own unique positions in the market. The point is, there are no winners and losers. There are better choices and mistakes to be made. Choices are not pure, but are limited by such things as your installed base and budget.

But one thing is clear. Everyone would be better off if the so-called experts—including us—focused more on customer needs than on picking sides.

John Gallant, editor in chief

jgallant@nww.com

Venture Over the Horizon • Kevin Fong

RBOCs have to get with the data program

Bandwidth—how to get it and how much it costs—weighs heavily on the minds of data users. This year is supposed to bring more bandwidth at more economical prices to everyone from telecommuters to small and mid-size business users. While a fair amount of this bandwidth will be delivered over the regional Bell operating companies’ copper, it does not appear the RBOCs will be much of a driving force.



Instead, the rollout of high-bandwidth digital subscriber line (DSL) technologies is being pushed by a handful of start-ups known as data competitive local exchange companies (CLEC). These companies are constructing regional networks that offer small and mid-size businesses a variety of data services that are still difficult to get from the local phone companies. Covad Communications, Northpoint Communications and Rhythms Net-Connections are examples of these new DSL-focused CLECs, all funded, in part, by venture capital firms

(although none of the three are funded by my firm, Mayfield Fund).

While everyone talks about bandwidth deployment as if it were a technology issue, it is really an organizational concern. The RBOCs, hampered by their long regulatory history, have become so risk-averse and inflexible that it will require a major change in their business structures to take advantage of the new bandwidth opportunities.

The voice business, which has been the RBOCs’ bread and butter, is only growing about 10% per year. Clearly, the future lies in data delivery.

The CLECs have the advantage of starting with a blank slate, a luxury not available to the RBOCs. An old high-tech marketing joke seems applicable here: “God created the world in seven days because He didn’t have an installed base.” The RBOCs are caught between protecting their lucrative T-1 business and deploying newer xDSL services, which make T-1 lines look slow and expensive.

Compare Covad’s service pricing with that of a traditional RBOC. Covad offers xDSL service to more than 40,000 homes and businesses in San Francisco and the Silicon Valley for \$100 to \$200 per month, much less than the \$350 per month that Pacific Bell charges for a T-1 line.

The RBOCs could make the changes that would enable them to compete with the CLECs if they faced up to a few facts. First, product cycles, which in the voice business run about 10 years, are closer to 18 months in the data business. The PC industry is a good place for the RBOCs to see how to manage product cycles of this small duration. Shortening amortization and depreciation schedules on equipment would be a good beginning.

Second, it is understandable that the RBOCs, with billions of dollars invested in equipment, processes and support systems, would want to maintain the status quo. However, they must learn to seize new opportunities, even if it means taking risks with their legacy businesses.

Finally, the RBOCs need to provide service in a time frame—and at a price—that is competitive with other bandwidth alternatives. A customer who has to wait six weeks for service, only to discover that it takes three visits from various phone company representatives before that service is up and running, is clearly going to be receptive to offers of quicker and easier deployment, especially at a lower price.

If the RBOCs were to finally get their act together and begin aggressively promoting economical high-bandwidth services, they would have the infrastructure and the capital to be highly competitive.

But as long as the RBOCs behave like protected monopolies, clinging to a high-margin business that is going the way of the rotary telephone, others will continue to capitalize on new growth possibilities.

Fong is a general partner of Mayfield Fund, a venture capital firm based in Menlo Park, Calif. He can be reached at kfong@mayfield.com.

MESSAGE

Send letters to nwnews@nww.com or John Gallant, editor in chief, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.

Fighting a virus

Your article “Microsoft Outlook, other new e-mail clients could open door to viruses” (March 30, page 35) states: “Remember the rumors about the so-called Good Times virus, which could purportedly be acquired by simply reading the text of an e-mail? The virus gurus calmed us all down when they claimed such a thing could never happen. They were wrong.”

Well, that is simply not accurate. No virus expert worthy of the name ever says “never,” unless it was in reference to a highly qualified statement, such as “No e-mail that contains pure ASCII code and lacks any form of program-

New standard is fueling 'Net QoS buzz

Over the past month, vendors have begun to endorse Multi-protocol Label Switching (MPLS), the IETF's switched IP standard.

Bay Networks, Ericsson and General DataComm have announced support for MPLS, and Nortel has submitted its first MPLS request for comment to the Internet Engineering Task Force for consideration. All of this action is the beginning of something that will reshape the Internet, enable IP-based virtual private networks (VPN) and generally cause havoc and turmoil among vendors and users.

MPLS is a way to bring some of the features of connection-oriented networking to connectionless networks. In normal connectionless routing, a packet's destination address is examined each time the packet flows through a node. The packet's route is adaptive based on the state of the routing tables in each node. The fact that the route can't be predicted makes it hard to reserve resources to guarantee quality of service (QoS). In addition, routing table lookups are time-consuming, and the bigger the table, the longer they take.

MPLS lets each node (router or switch) assign a tag to each of its routing table entries and communicate that tag to its neighbor nodes. When a node passes a packet to a neighbor, it adds to the packet the tag associated with the routing table entry.

This tag lets the destination router identify the next hop in the path without looking up the address. In fact, a series of tags could be added to a packet at the source, representing the sequence of nodes to be visited along the path, and the resulting tagged packet could flow end to end without any address lookups at all. In a network where all the tags were added to a packet at the edge, the interior nodes wouldn't even need to have a routing table in the traditional sense. They could just shuffle labels, in the same way frame relay networks route by shuffling data link connection identifiers.

Here's how this works: The interior node would receive a label from its source node with the data and look up the label on its "label table." The associated entry would provide the node with the destination port and label to be given to the packet on its next hop. It would replace the old inbound label with the new one, queue the packet for transmission on the designated port and go on to the next packet.

MPLS would allow traditional routed IP services to be provided as usual. In addition, MPLS could use labels to identify special services that go beyond ordinary IP. An example would be a VPN that provided QoS for certain destinations. MPLS routes, in theory, can handle any protocol because they are created by label swapping rather than protocol-specific address lookup.

If you're a vendor trying to inject virtual circuits into the Internet or other routed networks, MPLS is the door to the promised land. Frame relay, ATM, whatever your

virtual circuit flavor, MPLS can link it to a label and make it part of an IP network.

Marrying virtual circuits to IP is good for everyone because it enables users to add QoS features to IP using an architecture (frame relay or ATM) that's proven to be effective in providing QoS. It will also probably be helpful to users who want to integrate private frame or cell networks with public IP services, including the Internet.

For Internet service providers, the fact that MPLS is a step toward Internet QoS opens a whole new set of revenue opportunities. With MPLS, ISPs could provide premium and basic grades of Internet service. They could even provide VPN and Internet services to the same subscriber on the same access line, yet segregate the two types of traffic.

Even voice and video services over IP networks are easier — and thus more likely to be offered — with MPLS. These services differ from standard IP primarily in that they require special QoS. With MPLS, a label representing a special video or voice transport capability can be provided at every site where the service is to be used.

The user can indicate where a specific label should be attached to a traffic flow using any QoS selection technique the user's local access device will support — the Type of Service bits in the IP header, or the Resource Reservation Protocol, for example. Traf-

fic with these labels will receive special handling in the network.

For vendors, however, MPLS isn't all good news. Remember the point that MPLS labels represent special services that might not even look like IP? Sounds like tunneling, right? It is, only better.

Vendors that want to tunnel over the Internet will find MPLS can support all the features of tunneling without the overhead of extra protocols such as the Point-to-Point Tunneling Protocol or Layer 2 Tunneling Protocol. These new MPLS tunnels are potentially as secure as frame relay virtual circuits. A bonus for the carrier: End users can't create MPLS tunnels without carrier action, so they are billable services.

The first vendors have stepped forward on MPLS, and the flood is about to start. By the spring NetWorld+Interop 98 show, there will be a dozen or more new announcements in this space, some from major players. By the fall show, switch or router vendors that don't promise MPLS support will be doing the pathetic justifying and dodging we've come to associate with companies sinking into obscurity.

Hang on — MPLS is not only big in a PR sense, it's real.

Nolle is president of CIMI Corp., a technology assessment firm in Voorhees, N.J. He can be reached at (609) 753-0004 or via the Internet at tnolle@cimicorp.com.



ming statement can, in and of itself, infect a computer with a virus."

Indeed, if you look at the warnings from advisory bodies regarding the Good Times virus, they clearly hedge their bets, going so far as to point out some pretty arcane possibilities: for example, ANSI characters and PostScript code placed malignantly in the body of e-mail.

A little more research would have revealed the cautious approach by virus experts over Good Times and the malicious potential of e-mail in general. And although Microsoft's understanding of security is laughable and its attitude toward such matters purely marketing driven, it was unfair to single out Microsoft.

Call me old-fashioned and paranoid, but e-mail is supposed to be pure ASCII text.

Anything else is not only asking for trouble, it is clogging the Web with meaningless trifles for those who lack the ability to express themselves adequately in words.

*Stephen Cobb
Director of education & research
Miora Systems Consulting, Inc.
Playa del Rey, Calif.*

Java jive

Regarding your article "Sun faces Java backlash" (March 16, page 37): Anyone who thinks that Sun winning its lawsuit against Microsoft would be bad for Java obviously does not understand the nature of the lawsuit or the difference between what Microsoft is doing to Java and what the other licensee vendors want or need to do to the Java Virtual Machine. Too bad you could not point this out.

*Brian Bertien
Columbia, Md.*

Leave the ivory tower

Mark Gibbs' column "Ticked off by unique tech in Feb-U-ary" (March 9, page 66) regarding the pronunciation of the month February was so dumb as to prompt me to write and complain.

If this were an isolated incident, I would pass it off as an attempt at humor. But over the past few months, his columns have been getting more and more naive, as if in climbing his ivory tower, he has forgotten to look out the window at the real world.

For example, Gibbs' stand on [Adobe's] PDF is correct to the extent that people do not need or use paper. Problem is, many people do need paper: Not all of us have the luxury of sitting in front of a computer with a high-speed connection to the Internet all day.

His tirade on pronouncing February could have been set-

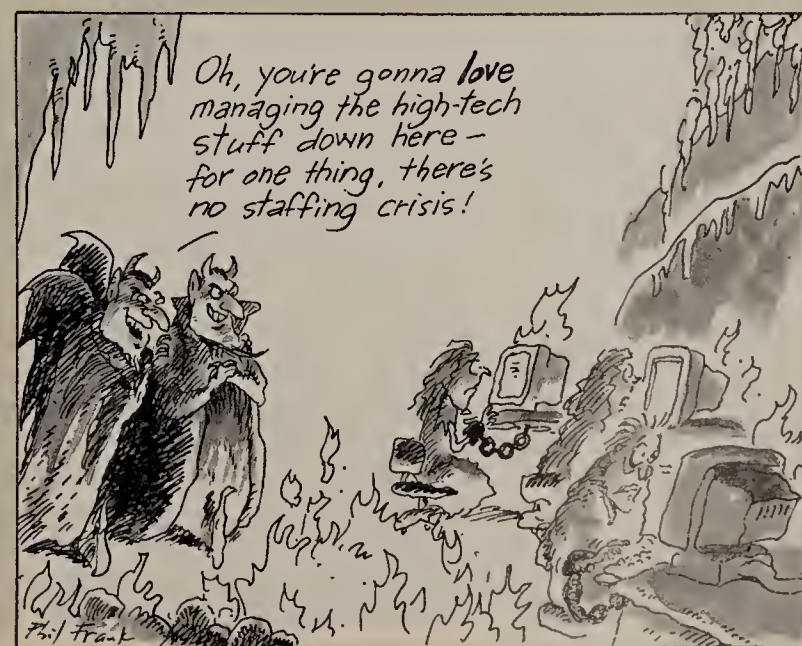
tled in seconds by looking in any reputable dictionary, where both pronunciations are indicated as correct, with his as the preferred.

Perhaps it's time Gibbs took

a sabbatical until he can come up with enough ideas to actually fill the prime space allocated to him.

*Vincent Jones
Tenafly, N.J.*

Teletoons



Interop 98 Planner

Convergence will be the focus of the NetWorld+Interop 98 show in Las Vegas next month, according to Leonard Heymann, vice president of content at NetWorld+Interop. The show's five conference tracks, 600-plus exhibitors and keynote speeches from four industry leaders should provide attendees with the information necessary to keep up with their fast-paced jobs. Because the show is so immense, Network World created this planner to make sure you don't miss any critical happenings. Carry it with you and you'll be set for the week-long event.

The Frame Relay Forum

The Frame Relay Forum will hold its annual meeting Monday, May 4, at the Las Vegas Hilton. The event is a must-attend for anyone interested in hearing about the future of frame relay.

Rosemary Cochran, principal at Vertical Systems Group, a Dedham, Mass.-based consulting firm, will give the keynote address. Cochran will talk about how frame relay compares with other data networking technologies. Cochran will also talk about the future of frame relay, which has been a godsend for users with legacy networks, such as SNA.

A lively debate is almost guaranteed as MCI's Melanie Hanssen and UUNET's Ralph Montfort square off in an IP vs. frame relay session. Hanssen will be on the frame relay soapbox, and Montfort will examine IP.

OUR PICKS

Monday

May 4

Two-day Tutorials

Monday and Tuesday, 9 a.m. to 5 p.m.

PRACTICAL NETWORK & SYSTEMS MANAGEMENT: STRATEGIES AND TOOLS THAT WORK

Solid network management is at the crux of maintaining a smooth, cost-effective network. John McConnell, president of McConnell Consulting, Inc., will lead you through the steps necessary to develop a service-level agreement (SLA). He'll also explore management tools that help you monitor your SLA and look at how to use Remote Monitoring (RMON), RMON2 and the World Wide Web to manage your network. Network planners and network administrators should come away with the tools necessary to create a sound network.

Monday and Tuesday, 9 a.m. to 5 p.m.
WIRELESS DATA NETWORKING

This event will cover developments in wireless technologies ranging from Cellular Digital Packet Data to packet radio networks, as well as wireless LANs and PBXes. Also, Rifaat Dayem, principal at Altamont Research, a Cupertino, Calif., consulting firm, will look at the status of wireless ATM and how personal communications services will fit into the world of wireless data.

One-day Tutorials

10:15 a.m. to 11:45 a.m.

ISPS: READY FOR VOICE?

Unless you've been under a rock for the past year and a half, you've heard all of the hype surrounding IP telephony. Sit in on this session to find out if your Internet service provider is going to jump into IP telephony with both feet or sit on the sidelines. The session also will cover how low-latency and toll-quality IP voice services can be achieved.

2 p.m. to 3:30 p.m.

ENTERPRISE DATA NETWORK STRATEGIES FOR VOICE AND VIDEO

Many enterprise network managers have contemplated adding voice and video to their network, but the mere idea has given other users reason to pause. Panelists will discuss the strengths and weaknesses of network technologies that can support the integration of voice, video and data. Users should walk away with vital information as to whether they have the infrastructure in place to take on such a project.

OUR PICKS

Tuesday

May 5

One-day Tutorials

10:15 a.m. to 11:45 a.m.

TOMORROW'S CALL CENTER

Find out how to bring your call center out of the ice age and into the next century. Blair Pleasant from The Pelorus Group will tell you how the Web and video kiosks can upgrade your telephone-based customer service center.

10:15 a.m. to 11:45 a.m.

NOT ON MY COPPER: CLEC DSL IMPLEMENTATIONS

If you're frustrated by your local exchange carrier's lack of digital subscriber line (DSL) deployment and services, check out what the competitive local exchange carriers (CLEC) are doing. CLEC representatives will talk about the pros and cons of rolling out DSL and what types of benefits users can expect.

2 p.m. to 3:30 p.m.

USING VIRTUAL PRIVATE NETWORKS TO PROVIDE SECURE REMOTE ACCESS

Virtual private networks (VPN) can be an excellent way for corporations to keep their remote workers and partners connected to vital information. This session will evaluate the differences between supporting a VPN over the public Internet, an intranet or traditional telecommunications dial-up connections.



PICK OF THE DAY

Keynote: Taking the Internet to the Next Level

Tuesday, 12:15 p.m. to 1:15 p.m.



John Sidgmore, chief operating officer at WorldCom and CEO of its Internet subsidiary, UUNET Technologies, Inc., will talk about how the Internet will be able to handle the onslaught of voice and video applications coming its way. Sidgmore will discuss Internet backbone developments, business partnerships that will strengthen the 'Net's quality of service and the future of Internet customer services.

Reader Service Card

IT'S EASY. Circle the number on this card which corresponds to the number at the bottom of the advertisement. Mail or FAX to (413) 637-4343 today. Information will be provided to you FREE of charge.

Circle the number below which corresponds to the number at the bottom of the advertisement for more information.

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45
46	47	48	49	50	51	52	53	54
55	56	57	58	59	60	61	62	63
64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81
82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99
100	101	102	103	104	105	106	107	108
109	110	111	112	113	114	115	116	117
118	119	120	121	122	123	124	125	126
127	128	129	130	131	132	133	134	135
136	137	138	139	140	141	142	143	144
145	146	147	148	149	150	151	152	153
154	155	156	157	158	159	160	161	162
163	164	165	166	167	168	169	170	171
172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189
190	191	192	193	194	195	196	197	198
199	200	201	202	203	204	205	206	207
208	209	210	211	212	213	214	215	216
217	218	219	220	221	222	223	224	225
226	227	228	229	230	231	232	233	234
235	236	237	238	239	240	241	242	243
244	245	246	247	248	249	250	251	252
253	254	255	256	257	258	259	260	261
262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279
280	281	282	283	284	285	286	287	288
289	290	291	292	293	294	295	296	297
298	299	300	301	302	303	304	305	306
307	308	309	310	311	312	313	314	315
316	317	318	319	320	321	322	323	324

Please check all of the products for which you are interested in receiving FREE information.

COMPUTERS/PERIPHERALS

- 600 ☐ Backup Devices
601 ☐ Cabling and Cabling Systems
602 ☐ Micros/PCs
603 ☐ Mainframes
604 ☐ Minis
605 ☐ Printers
606 ☐ Storage Devices
607 ☐ Terminals
608 ☐ UPS
609 ☐ Workstations

SOFTWARE

- 610 ☐ Applications
611 ☐ Client/Server Application Development
612 ☐ Communication/Terminal Emulation
613 ☐ Computer Operating Systems
614 ☐ Database Management/ROBMS
615 ☐ E-Mail
616 ☐ Groupware
617 ☐ LAN Operating Systems
618 ☐ Network Diagramming
619 ☐ Network Management
620 ☐ Security
621 ☐ Suites
622 ☐ Systems Management

INTERNETWORKING

- 623 ☐ Bridges
624 ☐ Routers
625 ☐ Gateways

LOCAL AREA NETWORKS

- 626 ☐ ATM Switches
627 ☐ Ethernet Switches
628 ☐ Fax Servers
629 ☐ Hubs/Intelligent Hubs
630 ☐ LAN Servers
631 ☐ Local Area Networks
632 ☐ Network Adapter Boards/NICs
633 ☐ Peer-to-Peer LANs
634 ☐ Print Servers
635 ☐ Remote LAN Access

- 635 ☐ Remote Access/Communication Servers
660 ☐ Security
636 ☐ SNMP Network Management
661 ☐ Storage
637 ☐ Superservers
638 ☐ Wireless Networks

REMOTE/WIRELESS COMPUTING

- 639 ☐ Laptops, Notebooks
640 ☐ PCMCIA
641 ☐ Mobile Data Equipment and Services
642 ☐ Wireless Data Equipment and Services

WAN EQUIPMENT AND SERVICES

- 643 ☐ ATM
644 ☐ CIT (Computer Integrated Telephony)
645 ☐ Diagnostic, Monitoring and Test Equipment
646 ☐ OSU/CSU
647 ☐ E-Mail/On-Line Services
648 ☐ FAX Boards/Modems
649 ☐ Fiber Optics
650 ☐ Frame Relay
651 ☐ ISDN
652 ☐ Modems
653 ☐ PBX
654 ☐ Security
655 ☐ SMDS
656 ☐ T1, T3, Fractional T1 Mux and Services
657 ☐ Teleconferencing/Videoconferencing

- 657 ☐ WATS/MTS
658 ☐ Internet Access Providers/Services
659 ☐ Firewalls
660 ☐ Web Servers
661 ☐ Internet Software Tools

INTERNET/ELECTRONIC COMMERCE

- 659 ☐ Firewalls
660 ☐ Web Servers
661 ☐ Internet Software Tools

OTHER

- 662 ☐ Education and Training
663 ☐ Storage Cabinets/Furniture

Network World

ISSUE DATE 04/13/98

CARD MUST BE RECEIVED BY 07/13/98

NAME

TITLE

COMPANY

STREET

CITY/STATE/ZIP

PHONE

FAX

E-MAIL ADDRESS

FILL OUT, DETACH AND MAIL

Now it's easy to find valuable information on the latest products and services with *Network World's* Reader Service Card - FREE!

FILL OUT, DETACH AND MAIL

Reader Service Card

IT'S EASY. Circle the number on this card which corresponds to the number at the bottom of the advertisement. Mail or FAX to (413) 637-4343 today. Information will be provided to you FREE of charge.

Circle the number below which corresponds to the number at the bottom of the advertisement for more information.

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45
46	47	48	49	50	51	52	53	54
55	56	57	58	59	60	61	62	63
64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81
82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99
100	101	102	103	104	105	106	107	108
109	110	111	112	113	114	115	116	117
118	119	120	121	122	123	124	125	126
127	128	129	130	131	132	133	134	135
136	137	138	139	140	141	142	143	144
145	146	147	148	149	150	151	152	153
154	155	156	157	158	159	160	161	162
163	164	165	166	167	168	169	170	171
172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189
190	191	192	193	194	195	196	197	198
199	200	201	202	203	204	205	206	207
208	209	210	211	212	213	214	215	216
217	218	219	220	221	222	223	224	225
226	227	228	229	230	231	232	233	234
235	236	237	238	239	240	241	242	243
244	245	246	247	248	249	250	251	252
253	254	255	256	257	258	259	260	261
262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279
280	281	282	283	284	285	286	287	288
289	290	291	292	293	294	295	296	297
298	299	300	301	302	303	304	305	306
307	308	309	310	311	312	313	314	315
316	317	318	319	320	321	322	323	324

Please check all of the products for which you are interested in receiving FREE information.

COMPUTERS/PERIPHERALS

- 600 ☐ Backup Devices
601 ☐ Cabling and Cabling Systems
602 ☐ Micros/PCs
603 ☐ Mainframes
604 ☐ Minis
605 ☐ Printers
606 ☐ Storage Devices
607 ☐ Terminals
608 ☐ UPS
609 ☐ Workstations

SOFTWARE

- 610 ☐ Applications
611 ☐ Client/Server Application Development
612 ☐ Communication/Terminal Emulation
613 ☐ Computer Operating Systems
614 ☐ Database Management/RDBMS
615 ☐ E-Mail
616 ☐ Groupware
617 ☐ LAN Operating Systems
618 ☐ Network Diagramming
619 ☐ Network Management
620 ☐ Security
621 ☐ Suites
622 ☐ Systems Management

INTERNETWORKING

- 623 ☐ Bridges
624 ☐ Routers
625 ☐ Gateways

LOCAL AREA NETWORKS

- 626 ☐ ATM Switches
627 ☐ Ethernet Switches
628 ☐ Fax Servers
629 ☐ Hubs/Intelligent Hubs
630 ☐ LAN Servers
631 ☐ Local Area Networks
632 ☐ Network Adapter Boards/NICs
633 ☐ Peer-to-Peer LANs
634 ☐ Print Servers
635 ☐ Remote LAN Access

- 635 ☐ Remote Access/Communication Servers
660 ☐ Security
636 ☐ SNMP Network Management
661 ☐ Storage
637 ☐ Superservers
638 ☐ Wireless Networks

REMOTE/WIRELESS COMPUTING

- 639 ☐ Laptops, Notebooks
640 ☐ PCMCIA
641 ☐ Mobile Data Equipment and Services
642 ☐ Wireless Data Equipment and Services

WAN EQUIPMENT AND SERVICES

- 643 ☐ ATM
644 ☐ CIT (Computer Integrated Telephony)
645 ☐ Diagnostic, Monitoring and Test Equipment
646 ☐ OSU/CSU
647 ☐ E-Mail/On-Line Services
648 ☐ FAX Boards/Modems
649 ☐ Fiber Optics
650 ☐ Frame Relay
651 ☐ ISDN
652 ☐ Modems
653 ☐ PBX
654 ☐ Security
655 ☐ SMDS
656 ☐ T1, T3, Fractional T1 Mux and Services
657 ☐ Teleconferencing/Videoconferencing

- 657 ☐ WATS/MTS
658 ☐ Internet Access Providers/Services
659 ☐ Firewalls
660 ☐ Web Servers
661 ☐ Internet Software Tools

INTERNET/ELECTRONIC COMMERCE

- 659 ☐ Firewalls
660 ☐ Web Servers
661 ☐ Internet Software Tools

OTHER

- 662 ☐ Education and Training
663 ☐ Storage Cabinets/Furniture

Network World

ISSUE DATE 04/13/98

CARD MUST BE RECEIVED BY 07/13/98

NAME

TITLE

COMPANY

STREET

CITY/STATE/ZIP

PHONE

FAX

E-MAIL ADDRESS

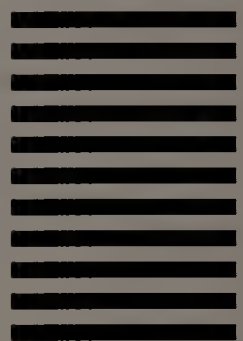


Pass this card along to a colleague so they, too, can get valuable product information FREE.

FREE Product Info



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 716 PITTSFIELD MA

POSTAGE WILL BE PAID BY ADDRESSEE

NetworkWorld

PO BOX 5090
PITTSFIELD MA 01203-9838



**Your resource for
enterprise network
computing information.**

FREE Product Info



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 716 PITTSFIELD MA

POSTAGE WILL BE PAID BY ADDRESSEE

NetworkWorld

PO BOX 5090
PITTSFIELD MA 01203-9838



FREE Product Info

2 p.m. to 3:30 p.m.

BROADEN YOUR ISP SERVICE PORTFOLIO: BEST-EFFORT IP IS NOT ENOUGH

Sit in on this session to hear about new technologies your ISP may be deploying to improve the level of service you're getting. The panel discussion will range from security to performance.

4 p.m. to 5:30 p.m.

LABEL SWITCHING

Layer 3 switching technology and the vendors supporting it are grappling with a confusing subject, to say the least. If you are among the perplexed, don't miss this session. Panel members will discuss how some switches fully process each packet at Layer 3 and how other switches identify and manage flows. The panel members will also discuss the status of standards in these areas.

OUR PICKS

Wednesday

May 6

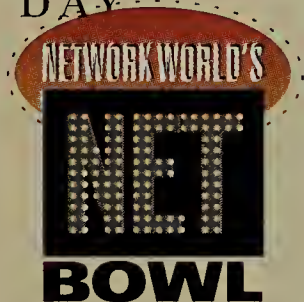


PICK OF THE DAY

Net Bowl

Wednesday, 6 p.m.

Why not end the day with some game show excitement at the Las Vegas Hilton? The 2nd annual edition of this Network World-sponsored event brings together great minds from the East and West Coasts in two teams that will battle for the prestigious Net Bowl master title. This year's event will boast industry names such as FORE Systems' Eric Cooper, who will play on the East Coast team, and Cisco's Larry Lang, who will be on the West Coast team. All proceeds will go to NetDay, a national grass-roots effort to wire the nation's K-12 schools to connect to the 'Net.



2 p.m. to 3 p.m.

SERVICE-LEVEL MONITORING

OK, so your service provider has finally agreed to an SLA with which you're satisfied. Now what? This session will provide you with information about service-level monitoring tools that not only ensure that your service provider is living up to your SLA, but also guarantee that your company is using its precious bandwidth effectively.

4 p.m. to 5:30 p.m.

TUNNELS AND PROXIES AND NATS, OH MY!

Learn how to better manage your company's demand for IP addresses in a world where there is an insufficient number of IP addresses to be had. Harvard University's Scott Bradner will moderate this discussion.

4 p.m. to 5:30 p.m.

WAVE DIVISION MULTIPLEXING — AN EXPONENTIAL LEAP IN NETWORK BANDWIDTH

Carriers are deploying wave-division multiplexing (WDM) technology throughout their fiber backbone networks. The technology can increase bandwidth up to 2.4G bit/sec on a single fiber link. This means more bandwidth without deploying more costly fiber. But what does this mean for users? This panel should be able to answer questions such as, 'When will carriers pass along WDM savings to users?' and 'Why is there still a shortage of high-speed connections if carriers are deploying WDM?'

OUR PICKS

Thursday/Friday

May 7, 8

Two-day Tutorials

9 a.m. to 5 p.m.

TAKING CONTROL OF THE EXPANDING WIDE-AREA NETWORK: REMOTE ACCESS, BACKBONE AND INTRANETS/EXTRANETS

Strategic Networks' Susan Almeida and The Metzler Group's James Metzler will give you a soup-to-nuts approach to managing your WAN. The instructors will cover topics such as computing the return on investment of your company's network and how to develop an SLA. They also will analyze narrowband and broadband services.

9 a.m. to 5 p.m.

STRATEGIC TECHNOLOGIES FOR INTERNET COMMERCE

If you're looking to generate income for your company by selling merchandise or services from your Web site, Vince Emery, director of electronic communications at Kanisa Software, can help. Attendees will get vital information on how to attract visitors to a Web site, analyze traffic, process sales orders using Common Gateway Interface and JavaScript, and use Secure Electronic Transaction processing. Knowledge of HTML will help you get the most out of this session.



PICK OF THE DAY

Keynote: Next Generation Broadband Communication

Thursday, 9 a.m. to 10 a.m.



Rob Glaser, CEO at RealNetworks, will discuss enterprise users' need for more bandwidth and what factors are causing the increased need. Glaser also will address the challenges of creating standards, open architectures and interoperability in a multivendor world.

Network World's THIN-CLIENT SHOWDOWN

Tuesday, May 5

10:30 a.m. to noon

Renaissance Hotel

Convention center rooms 219-222

Do you know a thin client from Thin Lizzy? Come hear leading vendors such as IBM, Microsoft and Wyse Technology engage in a presidential-style debate on the future of the thin-client environment. A panel of experts — John Cox, senior editor at *Network World*; Eileen O'Brien, director of International Data Corp.'s Enterprise Network Computer program; and Nicholas Petreley, editor in chief of *NC World* — will grill leading thin-client movers and shakers.

Come find out what all the fuss is about.

Moderator: John Gallant, editor in chief, *Network World*

Panelists: Howie Hunger, director of channels and marketing for IBM's NC division; John Frederiksen, group product manager at Microsoft; Jeff Menz, director of product marketing at Network Computer, Inc.; Steve Tirao, director of Java Desktop Systems at Sun Microsystems; and Jeff McNaught, senior director and general manager at Wyse.

www.nwfusion.com



Get more online:

Including our
unique Complete
Outsider's Inside
Guide to Las Vegas

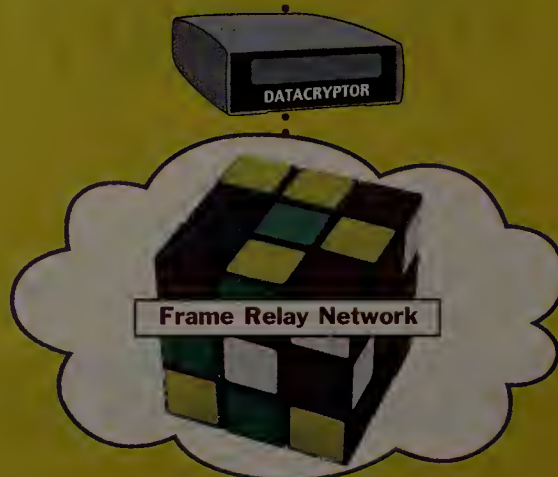
Network World
Fusion

A LITTLE PUZZLED OVER HOW TO BEST SAFEGUARD YOUR FRAME RELAY NETWORK?

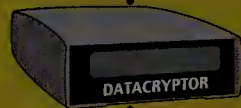
YOUR DATA MUST BE DELIVERED.



YOUR DATA IS ENCRYPTED WHILE ON THE NETWORK.



IT'S RECEIVED AND DECRYPTED,



DELIVERED SAFE, SOUND AND SECURE.

STOP
by Booth No. 5317
NETWORLD + INTEROP
Las Vegas '98
to Receive Your
Complimentary Internet
White Paper
and Compass

Yes, it's that simple. Racal is the leading provider of secure encryption products. Our frame relay Datacryptors™ are designed to protect your sensitive business communications over frame relay networks with minimal latency and no loss of bandwidth. Effectively creating a **Virtual Private Network** within the public network. Our products are cost effective, fast, highly reliable and secure. Racal provides world class traditional services including installation, maintenance, staging & configuration, and Technical Assistance Center (TAC) for Racal and third party products. What more could you ask for?

We have solutions for your frame relay, X.25 or Leased Line Networks. Ask about our family of secure frame relay products and services, call **1-800-RACAL-55 Ext:2007** or visit us on the information fast track at: <http://www.racal.com/rdg>

Racal Data Group

Access to Multimedia Information Networks

Racal, Racal-Datacom, FastFrame and Datacryptor are all trademarks of Racal Electronics Plc. ©1997 Racal-Datacom, Inc. 11/97 PBA-1729A-3

Circle Reader Service #7

RACAL

NT IS MAKING STRIDES IN SCALABILITY BUT ISN'T ANYWHERE CLOSE TO CATCHING UP WITH UNIX.

Bridging the gap

By Susan Breidenbach

Microsoft Corp.'s Windows NT Server continues to evolve as an enterprise-level operating system, but it's still playing second fiddle to Unix. Despite the claims trumpeted last May at Microsoft's Scalability Day, NT isn't likely to fill all your network operating system needs until some time in the next century.

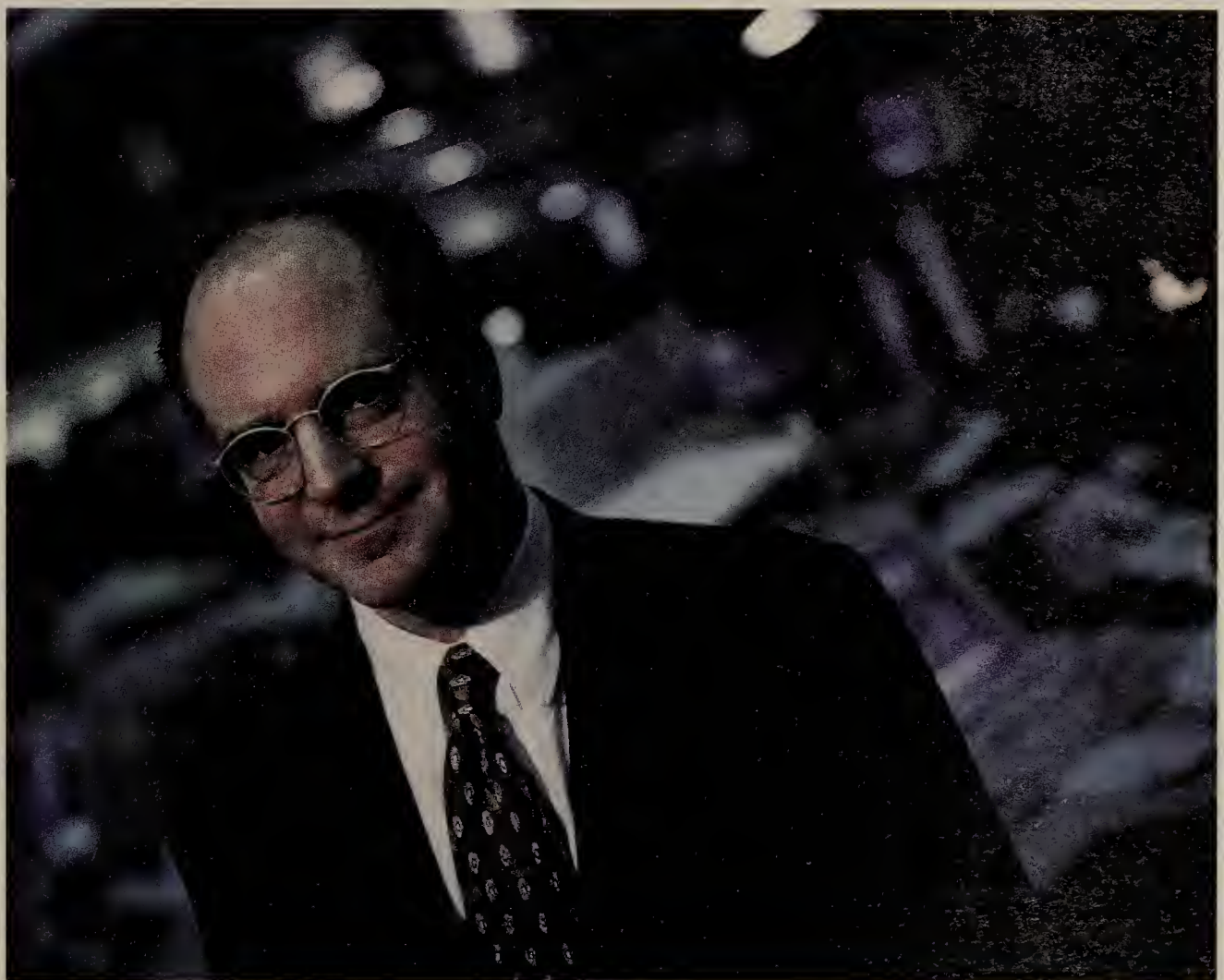
Enterprises are deploying NT at an ever-increasing rate, but in its traditional supporting role as a file and print and applications server. Unix is still the star of the strategic systems show, thanks to superior scalability, reliability and management talents.

"At the enterprise level, we don't see NT playing at all right now," says Mike Prince, chief information officer (CIO) for Burlington Coat Factory Warehouse Corp., in Burlington, N.J. "The stability and scalability of Unix really precludes our use of NT in that space. NT just isn't there yet."

But Microsoft keeps working at the enterprise level relentlessly, unwilling to concede any part of the high-margin operating system business. Despite some well-publicized implementation gaffes and security breaches, NT's metamorphosis into an enterprise platform proceeded steadily over the past year. And the much-ballyhooed release of NT 5.0 is full of enterprise-oriented functionality.

"The NT 5.0 beta has some enterprise features, like the new directory and large memory support, that are looking very good," says Sushil Vyas, vice president in charge of non-Unix servers for the Capital Markets Group of First Union Corp., in Charlotte, N.C. "If those things end up in the final release, they will bridge most of the gap between NT and Unix."

Meanwhile, companies such as Burlington Coat Factory Warehouse are finding plenty of use for NT in lower tiers of the network hierarchy. In



A lot of money is riding on NT at The Chicago Stock Exchange, which uses the NOS in a fully redundant network to run the trading floor and process more than 1,000 messages per second, says Steve Randich, CIO.

fact, usage studies indicate that the NT vs. Unix war barely exists outside the arena of marketing rhetoric. The platforms are still highly complementary today.

In a 1997 survey of users, International Data Corp. (IDC), of Framingham, Mass., found that file and print service was the primary reason companies were acquiring NT, followed by messaging and Internet access. Database hosting was a distant fourth. In contrast, database hosting was the primary reason users acquired Unix systems, followed by file and print, custom applications and Internet access.

Although NT is enjoying enormous sales growth (see graphic, page 42), the increase is coming from market expansion and displacement of other network operating systems — not at the expense of Unix.

Going upscale

The biggest technology gap between NT and Unix is on the scalability front. In a recent survey conducted by Forrester Research, Inc., of Cambridge, Mass., 62% of IT managers at large organizations viewed NT as unscalable. Although NT theoretically supports up to 32 processors in a symmetric multiprocessing (SMP) system, NT couldn't scale beyond two at the beginning of last year.

"There weren't any eight-processor systems, and even scaling up to four was iffy," says Michael Hurwicz, an analyst with Patricia Seybold Group, Inc. in Boston. "Now scaling up to four processors is quite practical."

Experts aren't impressed with NT's eight-processor performance, but Hurwicz points out that eight-processor boards aren't yet available

from Intel Corp. To test NT, analysts assembled eight-processor NT machines by combining two four-processor boards — a less-than-optimal hardware foundation.

While NT's added scalability is a start, it still pales in comparison to what Unix can do. IBM's AIX can run across a massively parallel 512-node system, and each node can be an SMP computer. In a single box, SunSoft, Inc.'s Solaris scales up to 64 processors and provides better linear scalability than NT at even the four- and eight-processor levels.

At four processors, NT is scaling by a factor of about 1.6, so each additional processor is only adding about 60% of its stand-alone processing power to the four-processor mix. In contrast, Solaris scales by a factor of 1.8 to 1.9, or 80% to 90%, according to Tom Goguen, senior product manager for Solaris at SunSoft, in Menlo Park, Calif.

"This lets companies increase the power of a server as demands on that server grow," Goguen says. "It is a lot cheaper to add processors and disk capacity to a single server than to put new servers in."

"NT is a major resource pig," agrees Thom Stark, president of Stark Realities, a network consultancy in El Cerrito, Calif. "You have to throw an incredible amount of hardware at NT to get it to behave acceptably. For example, whenever Microsoft says a piece of its software requires a

heavy transaction processing environments, very few NT servers are handling 400 concurrent users, says Dan Kusnetzky, program director of operating systems research at IDC. In contrast, some high-end Unix systems are supporting 30,000 concurrent users.

And Unix is hardly standing still while Microsoft plays catch-up. IBM set new Internet world records with its AIX- and RS/6000-based Web site for the recent Winter Olympics in Nagano, Japan. The site handled 650 million hits during the 16-day event and reached a peak rate of 103,429 hits per minute.

"The performance gap between Unix and NT may actually be widening," says Miles Barel, software product marketing manager for IBM's AIX division in Austin, Texas. "There's almost no scalability limit on Unix."

The lack of true enterprisewide directory services has been causing administrative and security problems for NT shops even at the file and print server level. NT currently limits domains to 40,000 directory objects, although a single NT 5.0 domain will be capable of holding up to 10 million objects. Administrators also will be able to configure multiple domains in a tree that conveys implicit trust among the branches.

In the meantime, managers can use third-party products such as Novell, Inc.'s Novell Directory Services for NT to scale NT domains across the enterprise.

NT's 32-bit architecture poses another weakness. The ability to address memory in 64-bit chunks means more data can be kept in memory and disk access is reduced. This very large memory (VLM) addressing boosts the performance of databases and data warehouses and enables them to scale much larger. The 64-bit architecture also increases I/O bandwidth so data can be transferred much faster.

"You want a 64-bit system for one of two reasons," says Morgan Gerhart, program director for META Group, Inc., of Burlingame, Calif. "Most people want the VLM capability so they can load up huge buffers in their database." Consequently, Unix started evolving into a 64-bit operating system several years ago as developers added VLM extensions for database applications.

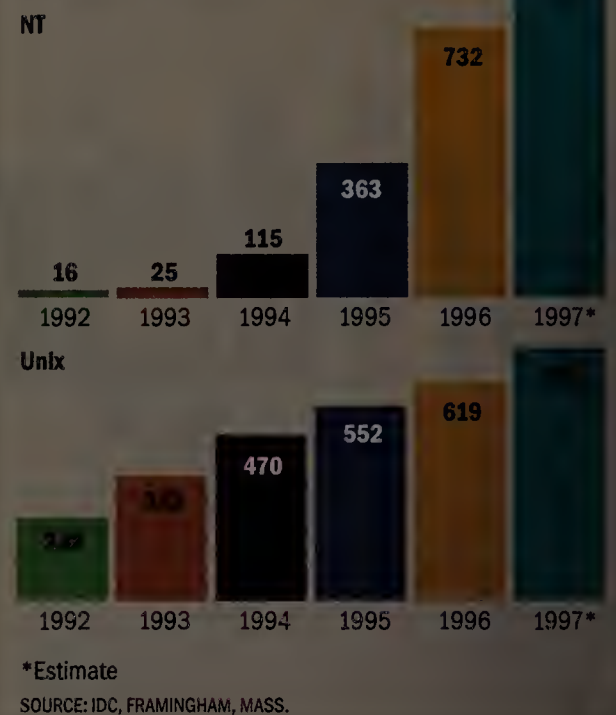
Other 64-bit components followed, and SunSoft is adding the final piece — 64-bit virtual addressing — to Solaris for SPARC this fall.

Following Unix's lead, Microsoft is beginning to address VLM capabilities to prepare for forthcoming 64-bit Merced processors. "When Merced ships, NT 5.0 will have 64-bit extensions that will enable big buffers, which is what 95% of the big applications need," Gerhart says.

Software generally lags hardware advances by several years, and industry observers scoff at Microsoft's promise to deliver a complete 64-bit version of NT when Intel's first Merced chipsets ship in 1999. However, this isn't what's preventing deployment of enterprise databases and data warehouses on NT. A full 64-bit operating system is actually more important on the workstation side for computer-intensive applications.

In any case, Intel and its traditional hardware OEMs appear to be hedging their bets. Instead

NT SHIPMENTS NOW SURPASS UNIX (Unit sales in thousands)



of relying entirely on Microsoft's NT efforts, they are asking SunSoft to have a 64-bit version of Solaris ready for Merced when it ships. Intel has also promised to help The Santa Cruz Operation, Inc. release a 64-bit version of UnixWare 7.

Reliability realities

Where mission-critical enterprise applications are concerned, scalability issues become academic if a system can't be trusted to stay up all the time. Some Unix systems have been continually available for a few years, even throughout maintenance and upgrades. You can even change the IP address on a Solaris server without bringing it down, and SunSoft has promised live operating system upgrades in the near future.

In the NT environment, systems have to be rebooted whenever changes are made to the Windows Registry or when memory leaks threaten to precipitate a server crash.

"Wintel programs don't run for weeks on end without locking up," Burlington Coat Factory Warehouse's Prince says. "NT is getting better at this, but it's not like Unix environments where programs almost never crash." Wintel hardware also tends to be less reliable than Unix platforms.

Some of NT's shortcomings in the reliability arena are due to its heritage as a desktop operating system. The operating system design priorities for a desktop graphical user interface (GUI) and a multi-user server are very different.

Microsoft's one-size-fits-all approach has produced a general-purpose operating system that has grown from 16 million lines of code in Version 4.0 to 30 million in Version 5.0. In their hurry to create an operating system that competes with Unix, NT developers have been inefficient in implementing their design, Goguen says.

The current version of the more mature and streamlined Solaris is a relatively lean 10 million lines of code. "So it's easier for us to maintain our code," Goguen says. "In terms of reliability, having less complexity is like having fewer moving parts."

There is no facility in NT that tracks misbehav-



Michael Prince, CIO of Burlington Coat Factory Warehouse, says NT doesn't yet have what it takes for enterprise use.

certain amount of RAM, that means what it will take to run like a slug on drugs. Figure on adding at least twice as much."

Heavy lifting

Despite these limitations, NT has made some impressive gains in scalability.

"In standard [Transaction Processing Performance Council] testing, we've gone from 2,100 transactions per minute and 1,800 concurrent users in October of 1995 to 16,000-plus transactions per minute and more than 14,000 concurrent users today," says Ed Muth, group product manager of NT enterprise products at Microsoft. That's nearly an eightfold increase in 30 months.

However, such benchmarks just show how some products perform relative to others; they don't say a lot about real-world capabilities. In

ing applications and prevents memory leaks. Consequently, these applications may steal more and more memory until the system crashes.

But such interruptions aren't an option in a high-availability enterprise server. Unix can spot faulty programs before they crash and continue to provide uninterrupted service to other applications even if they do. And Unix applications are less likely than their NT counterparts to cause trouble in the first place.

"Unix programmers and application architects tend to have more experience developing applications that are highly durable and supportable in a multiuser network environment," says Terrell Jones, CIO for The Sabre Group Holdings, Inc., a travel services company in Ft. Worth, Texas.

Sabre has two big travel applications — one on NT and one on Unix. "For speed and scalability, Unix remains the choice," Jones says. "And NT probably has a higher operational cost because of its hardware requirements and complexity. But we're happy with NT security."

Safety in numbers

Microsoft last year addressed reliability by adding its ambitiously named Cluster Server software. Two NT servers can be linked to provide redundancy in case of a failure. However, the software doesn't provide a single-system image, and failover recovery takes 30 to 60 seconds. Nor do the two servers do load balancing, which means that a lot of system resources are being wasted. NT 5.0 will improve on this by supporting clusters that scale beyond two servers and perform load balancing.

Meanwhile, managers can use NT in a zero-downtime environment with the help of some third-party technology. The Chicago Stock Exchange (CSX) has a fully redundant NT network that runs its trading floor and processes more than 1,000 messages per second. The number of concurrent users stands at 130 today and is expected to increase to 300 in the next year. The NT-based network is a mission-critical platform that supports real-time transactions and must be available 100% of the time when the market is open.

"For everything below the enterprise database level, availability is not an issue with NT if you select the right products and design and implement an appropriate fault-tolerant architecture," says Steve Randich, CIO at CSX.

The CSX trading floor application is based on the Versant object database from Versant Object Technology Corp., of Fremont, Calif. The company has a Versant Fault Tolerant Server version that protects the CSX application from NT or hardware failures.

"Memory leaks were a problem at first, but they have been largely resolved by working with developers on fixes that make the applications behave properly," Randich says. "And the NT servers are rebooted after the market closes each day, so we free up consumed memory."

There's more to availability than clustering. Equally important are management facilities that provide advanced diagnostics, a global directory, remote administration and online serviceability. "This is where NT is way, way behind," says Hurwicz of the Patricia Seybold Group. "There is

still a lot that needs to be done."

For one thing, NT must become a good corporate citizen. It is coming into enterprise environments in a junior position and has to be managed by the senior machines in the hierarchy. "Microsoft always assumes its software is in the senior position, and in reality, it's not," says IDC's Kusnetzky. "That's been the real trial for implementers — making NT fit in and be manageable."

Misbehaving applications cause most of the availability problems. The core NT technology appears to be quite robust. Companies such as Berkeley Networks, Inc. and PulsePoint Communications have chosen NT as the operating system for next-generation data switches and carrier-grade telecommunications switches.

"We use NT in a turnkey, black-box fashion," says Donal Byrne, vice president of marketing for Berkeley Networks, of Milpitas, Calif. The company is set to release an applications-aware Gigabit Ethernet switch. "When you don't allow an arbitrary set of drivers or applications to be placed on top of NT, its uptime is very, very high."

Getting past insecurities

While opinions differ, the gap between NT and Unix doesn't seem to be so wide when it comes to security. In fact, some think NT has an inherent advantage because security attributes were built into it from the ground up.

"From an architectural standpoint, this gives NT a huge advantage," says Andrew Lowe, a software architect for PSW Technologies, Inc., of Austin, and author of the book *Porting Unix Applications to Windows NT*.

But for the time being, Unix has a jump on

security simply because of its proven track record.

Unix started off as a relatively insecure environment back in the ARPANet days; security features were added gradually as the government adopted the operating system and forced the issue. Kerberos was developed on Unix, and Unix vendors can now offer several levels of security.

However, users insist NT is quite secure, too, despite the recent rash of denial-of-service attacks on NT-based Web servers. Most of the victims weren't protecting their NT servers with firewalls, and all failed to install the fix Microsoft had published prior to the attacks. Not surprisingly, most security breaches are caused by faulty security administration.

"I'm happy with the security of NT relative to Unix," Jones concludes. "It's just a perception that NT security is weak. It hasn't been out there long enough for the security firms to tout it."

NT 5.0's security features include Kerberos authentication, distributed password authentication and support for public- and private-key encryption. The CryptoAPI has been updated to help third parties create new encryption techniques, and the NT file system has been enhanced to support encryption at the file and directory levels on servers and workstations.

Operating system for the masses

One NT feature that gets touted is ease of use. While Unix is programmer-driven, Microsoft has always focused on making things easier for users. NT's network configuration is completely GUI-based and the majority of IS professionals are more comfortable in Windows than in Unix.

"You can't get good Unix people, and retaining the ones you have is also a problem," says Edward Simmons, vice president of distributed architecture for Merrill Lynch & Company, Inc., of Plainsboro, N.J. "That's a big reason for our push into NT. It uses an object model, the setup is easier and there aren't different flavors of it. All NT is the same."

However, NT's entry point is so low that it is causing problems with some big NT rollouts.

"NT's greatest strength is also its greatest weakness," says Nina Lytton, president of Open Systems Advisors, Inc., an IT consultancy in Boston. "The first rung of the ladder is so close to the ground that anyone can get on it."

Many administrators have a desktop or workgroup orientation and lack the enterprise skills they need to deploy NT on a large scale. Some try anyway and make a mess, and the failures get chalked up to NT scalability problems.

"We're seeing a lot of problems in NT deployments that have nothing to do with technology and everything to do with lack of skills and proper management," says Tom Bittman, research director in charge of the NT and mid-range systems group at Gartner Group, Inc., in Stamford, Conn. "People who don't have an enterprise perspective are pushing NT too far in terms of scalability and reliability."

Ultimately, NT's success vis-à-vis Unix depends on application support. Microsoft has always been great at rallying independent software vendors (ISV) around the Wintel platform, and users and analysts agree the behemoth made a lot of progress this year.

"The last time we saw this kind of major invest-

HOW NT AND UNIX STACK UP

NT's weaknesses relative to Unix:

- **Scalability**
Doesn't scale well beyond 4 to 8 processors, supports only a fraction as many concurrent users, and can't support 64-bit memory addressing.
- **Availability/reliability — software issues**
Doesn't support true clustering, has to be rebooted regularly and runs on hardware that is less reliable than Unix platforms.
- **Manageability**
Lacks a lot of enterprise-level systems management capabilities.
- **Enterprise implementation**
Heritage is desktop, not multiuser, so programmers and administrators need more enterprise skills.
- **Enterprise support**
Traditional business model is high volume, low value, while enterprise applications demand the reverse.

NT's strengths relative to Unix

- **Sheer numbers**
Wintel platform commands more than three-fourths of total operating system market.
- **Familiarity and ease of use**
Same GUI across desktops and servers, end-user applications and system utilities.
- **Standard platform for developers**
Single version of NT and its built-in services, including Microsoft's Common Object Model, for developers to support.
- **New technology**
NT stands for New Technology and Microsoft is dealing with less installed-base inertia.
- **ISV support**
Development tools abound, and almost all totally new products — both business applications and middleware — are NT-based.

ment in application development was when Windows 3.0 first came out," Kusnetzky says. Enterprise-level software developers, such as Oracle Corp., SAP AG, PeopleSoft, Inc. and The Baan Co. N.V., are moving aggressively into the NT space. So are smaller players.

"The third-party software developers are much more comfortable in the NT

environment today," says CSX's Randich. "We use Orbix from Iona [Technologies PLC, of Cambridge, Mass.] for our object request broker, and it was a bit rickety on NT a year ago. But Iona has stabilized it and added some rich features." CSX had a similar experience with its Versant object database.

In the enterprise resource planning

arena, NT now accounts for nearly half of all of SAP AG's unit sales of SAP — up from zero in 1995. "SAP is one of the most demanding applications in the galaxy, with single transactions touching multiple database tables," Microsoft's Muth says. "No one has yet built a computer big enough to consider SAP a trivial workload."

IBM last month gave NT a big vote of confidence when the systems giant announced the porting of IBM's TXSeries transaction-processing middleware to NT. It is being bundled into a high-end software suite, code-named Bartoldi, that comprises ADSM, DB2 Connect and DB2 Universal Database, Network Communications Server and systems management links to Tivoli Systems, Inc.

"These are the crown jewels, and IBM is bringing them to NT," Hurwicz says.

Clearly, the same economic weapons that won Microsoft the desktop — commodity hardware and ease of use and development — are rapidly securing for NT the crucial middle tier, where most business-logic programming takes place. Microsoft's success here is forcing even the most committed Unix shops to deploy some NT servers.

One is Nicholas-Applegate Group, an investment banker in San Diego. The company would rather stick strictly to

Go online for more information on NT and Unix scalability.

6 6 2 2

www.nwtfusion.com

Unix, but it isn't possible anymore. "Microsoft is definitely getting the middleware," says David Buckley, global Unix systems manager for Nicholas-Applegate. "It's why we're running a few things on NT."

A matter of time

To move into the top tier of the enterprise application arena, Microsoft needs to scale its business model up alongside NT. The company is geared toward selling millions of cheap desktop units anonymously through a distribution channel. In the Unix market, a single enterprise system might cost \$5 million and would involve an ongoing service and support relationship with the customer.

For now, "it is frankly not our goal to compete with the top 1% to 2% of scalable systems," says Mark Hassel, NT server product manager at Microsoft.

Meanwhile, count on the Unix community to keep raising the technological bar.

Much of what ails NT is simply its age. Unix has been maturing for decades while 5-year-old NT is barely out of the toddler stage.

"NT is a good body of code with good features, but it has to be out there much longer before people can really analyze its behavior in an enterprise environment," PSW's Lowe says.

Breidenbach is a consultant and freelance writer in San Mateo, Calif. She can be reached at sbreidenbach@usa.net.

FIREWALL FREE FOR ALL



In a time when about one half of polled Fortune 1000 companies have had their computer networks compromised, you need nothing less than the world's most secure firewall protecting your electronic assets.

Call today for a **FREE 30-day evaluation copy of CyberGuard™ Firewall for Windows NT**, and discover the most secure, easiest to manage and most cost-effective* network security solutions available anywhere.

*Software starting at about \$1,000.

CYBERGUARD
CORPORATION

www.cyberguard.com • 888-CYBG-INFO (292-4463) EXT. 6005

Circle Reader Service #4

Hearing the call

Continued from page 1

Similarly, Perfection Spring and Stamping, a \$19 million manufacturer in Mt. Prospect, Ill., says its decision to replace its outdated telephone system with a Windows NT-based voice/data network is paying off. The 70-phone system from Sphere Communications, Inc., in Lake Bluff, Ill., cost \$50,000, compared with \$60,000 for a similar PBX system. Perfection Spring expects to save another \$9,500 per year by eliminating telephony service calls and digital telephone replacement bills. And new features such as voice mail and an automated attendant have boosted productivity by an estimated 15%.

These companies and others like them are leading the charge toward a new type of converged call center, typically using Windows NT Server and open-standard software to deliver voice, data and video to the desktop over a single ATM line.

But these pioneers have one thing in common: They are running relatively small operations. That is indicative of the limitations of these early converged systems in terms of scalability and reliability. Indeed, nobody is yet predicting that managers of large-scale call centers will start ripping out their PBXs and Ethernet wiring any time soon.

"We would never think of doing a forklift upgrade," says Bruce Lummis, vice president of telecommunications at QVC, Inc., in West Chester, Pa. QVC has three call centers with a total of 1,200 seats. The centers, which handle a total of 85 million calls per year generated by the company's popular TV home shopping show, run on PBXs from Lucent Technologies, Inc. Lummis estimates the company has invested \$15 million in the three centers.

The investment in existing equipment is only one factor keeping network managers from jumping on the convergence bandwagon, according to Jim Burton, an analyst at C-T Link, in St. Helena, Calif. "We don't have standards, we don't have reliability in the data network, and we don't have reliability in the operating environment. It's just not there yet," Burton says.

"What people have come to expect [in telephony] is two hours downtime in 20 years," he says. NT doesn't offer that, and until it does, companies are "not about to give up the reliability of the phone network for the data network."

Lummis concurs. "Today, NT scares the heck out of me," he says. QVC uses NT as the platform for its online buying system, iQVC. "We're just now getting that rascal stable, and it's been a year," Lummis says.

All this explains why vendors of converged call center wares are content for now to begin nibbling at the edges of a PBX market that is

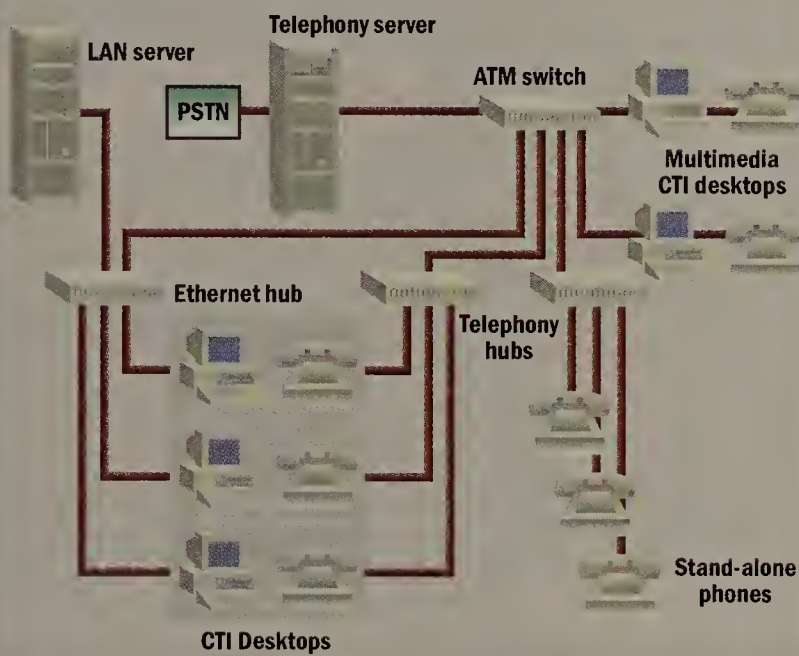
estimated at \$6 billion per year. The first users tend to be small companies that need to swap out their old phone networks or companies building call centers from scratch, says Joe Outlaw, an analyst at Datapro Information Services, Inc., in Delran, N.J. For them, the new systems are a godsend.

The pioneers aren't exactly household names, unless you're familiar with the likes of Willie Washer Manufacturing Co., in Elk Grove, Ill. The company was moving its data network from Unix to NT and needed to replace its outmoded phone system at the same time, says Jim Neumann, director of operations.

The Sphere Communications system, dubbed

SPHERICALL LAN PBX

The LAN-based PBX from Sphere Communications uses a Windows NT server and an ATM switch to offer users a choice of three configurations: standalone phones, Ethernet connections to an integrated PC/phone desktop, and a one-pipe ATM connection to a multimedia desktop.



Spherically, required that Neumann add an NT server to support telephony applications. That server is linked to the firm's NT data server. Forty client PCs are outfitted with telephony cards and either ATM or Ethernet adapters, depending on the level of user requirements. Users with high bandwidth requirements get the ATM connection.

A single ATM port in the Spherically server can handle up to 24 clients; beyond that, an additional ATM switch is required. The company says a 20-port ATM switch costs about \$3,000, or about \$150 per port.

The system, which was installed about eight months ago, is "powerful, easy to use and a real timesaver," Neumann says. "Basically, you have only one set of cables."

Cruising with CellIT

InkTel began shopping for a state-of-the-art

call center when one of its customers, a major cruise line, asked it to take on additional call center business. InkTel came across another Miami-based company, CellIT, which offered to build the entire network from scratch and provide specialized software, says Eddy Arriola, vice president of sales and marketing for InkTel. "I just supplied a building with four walls and furniture," he says.

InkTel has seen a savings of \$5,500 per seat with CellIT's CCPRO system, compared with the cost of a traditional PBX. The savings come from four areas: initial investment, maintenance, application development and training.

CCPRO uses an NT server along with an ATM switch from 3Com Corp., which delivers 25M bit/sec ATM links to call center agents. A Bell-South T-3 link supports all required phone lines.

With the new system, which is still being rolled out, agents are able to eliminate their phones altogether, instead using a headset attached to a PC. InkTel was also able to merge its inbound and outbound calling systems. Due

to incompatible application software, the previous system required each agent to have two PCs, one for calls from incoming 800 lines and another for outgoing calls. There were also separate reporting systems.

The company's next step is to add video. For example, the cruise line is looking at installing kiosks in hotels and airports that would allow potential customers to connect to the call center and not only get information on cruises, but also see video clips of various ships and destination points.

Perfect fit

David Kahn, president of Perfection Spring, is similarly bullish on his new system from Sphere Communications. "It's definitely the way to go instead of a separate PBX," he says.

The system has been up and running for about a year, and Kahn says he's had no problems with sound quality. The network experienced some glitches during the beta phase but has been stable since updated software was installed in July.

Kahn adds that he only installed ATM adapters for five of the roughly 50 stations on the system because of ATM's higher cost. All others use an Ethernet connection to the ATM switch.

The Sphere system works with Microsoft Corp.'s BackOffice applications, which enables Kahn's company to link its e-mail and voice mail systems. For example, employees can forward voice mail as attachments to Exchange e-mail messages.

Down the road, Kahn wants someone browsing the company's Web site to be able to click on a URL and connect directly to a sales representative or customer service person's phone.

Burton says that kind of functionality would require standards for IP telephones and increased reliability in NT. For those reasons and others, he says widespread deployment at high-end call centers is a good five years away. ■

1998 SEMINAR DATES AND LOCATIONS:

April 6	Washington, DC
April 7	Philadelphia, PA
April 22	Atlanta, GA
April 23	Dallas, TX
May 12	Chicago, IL
May 13	Minneapolis, MN
May 19	Boston, MA
May 20	New York, NY
June 9	Newport Beach, CA
June 10	San Francisco, CA


DIRECTED
AND PRESENTED BY
DANIEL BLUM
RAPPORT COMMUNICATION

SEMINAR COURSE OVERVIEW:

Enterprises across the world are eager to capitalize on Internet client/server e-mail as a universal infrastructure utility for supporting vital groupware and electronic commerce applications. However, neither monolithic proprietary mail systems nor yesterday's shareware mail packages can successfully support very high volume, extremely mission critical applications on your intranet, extranets, or the Internet at large.

Next Generation Messaging will help you decide what services you need from Internet messaging and intranet infrastructure applications such as directories, groupware, and workflow, and what benefits your company can expect from upgrading to the latest standards and technologies. You will learn how, when, and why to deploy products supporting new standards like Multi-purpose Internet Mail Extensions (MIME), Internet Message Access Protocol 4 (IMAP4), Extended Simple Mail Transfer Protocol (ESMTP), the Lightweight Directory Access Protocol (LDAP), and Secure MIME (S/MIME).

Whether you are just starting the migration to Internet and client/server messaging or have already begun, this seminar will cover best practices for selecting messaging products, lowering cost of ownership, and migrating from legacy mainframe or LAN e-mail systems to client/server messaging systems.

REGISTER AND YOU WILL RECEIVE:

- Comprehensive Seminar Workbook
- Free 3-month trial subscription to *Rapport Messaging Review*, the premier industry newsletter covering the business of technology of electronic messaging
- Opportunity to visit with leading messaging vendors
- Luncheon and break refreshments
- All of the above included in your \$450 registration fee. (Save with our new team discounts for two or more attendees!)

Note: If you can't attend, call us and order this informative and useful attendee materials kit for just \$99!

Register today for the seminar nearest you!

(800)643-4668 • www.nwfusion.com/seminars

SPONSORED BY:

Candle

COMPUTER ASSOCIATES
Software superior by design.

CONTROL DATA
The Integration Company

digital™

Lotus

WINGRA

TECHNOLOGIES INCORPORATED

Worldtalk

If you are interested in sponsorship opportunities, please call 508/820-7520.

NetworkWorld 
TECHNICAL SEMINARS

NEXT GENERATION MESSAGING

BEST PRACTICES FOR
INTERNET E-MAIL, DIRECTORIES
AND GROUPWARE

ATTENDEES WILL LEARN HOW TO:

Anticipate and profit from key Internet/intranet messaging, groupware, and electronic commerce technology trends

Close dangerous security holes, block spammers, and enforce security policies as well as practice safe messaging using PGP or S/MIME

Demystify the Internet messaging and directory standards (such as IMAP, LDAP, S/MIME) and understand major vendor's messaging and directory product programs

Use Internet e-mail and directories to support electronic commerce and business-to-business communication

Build a messaging directory and integrate it with your corporate LDAP, X.500, or metadirectory

Learn what messaging, directories, and groupware should cost and how to project/assess your costs

Follow best practices for messaging deployment, management, administration and help desk

www.nwfusion.com/seminars

**NetworkWorld
Fusion**

Visit us on-line . . .

- Complete seminar outline and benefits of attending
- Comprehensive presenter bio
- Register

AUTOMATED FAX-BACK INFORMATION AVAILABLE BY CALLING (800)756-9430 CODE #95.

REVIEW

NETSCAPE APPLICATION SERVER 2.1 IS A HIGH-PERFORMANCE,
HIGH-AVAILABILITY WEB APPLICATION SERVER PLATFORM

A Web application engine for the enterprise world

By Mike Machado

Electronic commerce is the Porsche of the networking world — flashy, exciting and expensive. Like building a top-end sports car, putting enterprise database applications on the World Wide Web requires a server that offers high performance, high availability and the flexibility to allow complex systems integration.

We found Netscape Communications Corp.'s Netscape Application Server 2.1 delivers an impressive list of capabilities for developing and operating electronic commerce applications. Compared with applications on standard Web servers using Common Gateway Interface (CGI) running on the same hardware, it offered much lower response latencies and higher throughput.

We also built an application that employed two Netscape Application Servers and found increased overall throughput. We attempted to induce failures by disconnecting the power or network for one of the two systems. This caused pending requests on the disconnected server to

time out, but new requests continued to be processed by the remaining server.

Systems integration capabilities

Netscape Application Server requires you to use a separate Web server to host static pages and images, relay requests for dynamic content and return results to the browser. The Web server must support Netscape Server API or Internet Server API plug-in interfaces or run CGI executables.

When a request for dynamic content comes in, a plug-in on the standard Web server determines the best Netscape Application Server to relay the request to. Netscape Application Server takes the relayed request and calls your custom C++ or Java Web application logic module for processing. It then returns the results back through the standard Web server to the requesting browser.

Database integration is a key strength of Netscape Application Server. With a single uniform interface, you can access an impressive array of native drivers for Oracle Corp., Sybase, Inc., Informix Software, Inc. and Microsoft Corp. SQL Server databases. Also supported are Open Database Connectivity access and a variety of legacy interfaces, including most IBM mainframe sources. Database access with Netscape Application Server can run from simple single-row queries to complex hierarchical queries such as "products grouped by category and manufacturer."

Netscape Application Server allows you to return data to the client in HTML from templates you design or via Extensible Markup Language (XML) for data exchange with other systems. With XML, you can provide a simple

Score Card

Netscape Application Server 2.1

Administration/deployment (25%)	9 x .25 = 2.25
Performance (25%)	9 x .25 = 2.25
Availability (25%)	9 x .25 = 2.25
Development tools (15%)	7 x .15 = 1.05
Installation (5%)	8 x .05 = 0.40
Documentation (5%)	9 x .05 = 0.45
Total Score	8.65

Individual category scores are based on a scale of 1–10. Percentages are the weight given each category in determining the total score.

data interchange interface for other applications. For instance, you could allow resellers to integrate your inventory query interface with their online ordering system.

On the other hand, Netscape Application Server's rich and powerful server interfaces and template mechanisms are proprietary application server interfaces such as Enterprise JavaBeans and Java Serverlet are rapidly gaining momentum; Netscape has announced plans to support these and other emerging application server interfaces later this year.

Building applications

Along with database query and application deployment tools, Application Server includes tools for site development, but be warned: The application development process with Netscape Application Server does not approach the point-and-click integration of tools such as Microsoft FrontPage or NetObjects, Inc.'s NetObjects Fusion. On the other hand, low-end development environments don't have the ability to handle serious mission-critical issues as well as Application Server does.

The product includes Web application generator tools for creating simple data input, querying or reporting applications for the Web. These tools also can help you quickly build an application skeleton as a starting point for your custom development.

Net Results

NETSCAPE APPLICATION SERVER 2.1

Netscape Communications Corp.
(650) 526-3900
http://home.netscape.com/comprod/server_central/kiva/index.html
Pricing: Unix, \$35,000 per CPU;
Windows NT, \$25,000 per CPU

PROS

- ▲ Powerful Web application server
- ▲ Robust tool set for building and running mission-critical applications
- ▲ High performance and availability

CONS

- ▼ High price tag
- ▼ Highly complex

Application servers use a component approach to application construction, which allows developers to reuse pieces easily. The primary components of an application for Netscape Application Server are application logic modules written in C++ or Java, HTML templates for defining the Web application interface, and query files, which contain libraries of data access operations.

Application logic modules are executable components that process the input and return results to the client. Netscape Application Server provides graphical tools to help you create simple application logic skeletons for data input, querying or reporting. The application server includes a rich programming interface to allow you to implement even the most challenging of Web applications.

Netscape Application Server lets you keep session information for each user, such as shopping cart contents, preferences or buying interests, and share session information across multiple

servers. This allows you to scale complex applications and deliver automatic failover by adding servers, while continuing to track user session information.

You can use HTML templates to merge the data from your database and application logic processing with an HTML design. The product includes a simple HTML designer to help you create templates quickly, or you can use any of the leading HTML design tools to craft your own look and feel. Special template tags in the HTML code reference the data you want to display and its formatting options. The template system can handle everything from simple form information to complex hierarchical query results. It's relatively easy to generate hierarchical reports such as "products by category and manufacturer" with simple layered template references to the "category" and "manufacturer" groups in query data.

A query designer provides a point-and-click interface to create queries and data models directly from your database. The designer is an effective tool for most database access operations required by Web applications. It gives you a graphical view of query, insert, update and delete operations. The query designer outputs raw SQL, so you can quickly sketch your data access with the graphical designer and then customize the output SQL.

You can iron out bugs in application logic using most of the leading development tools for Java and C++, with the notable exception of Microsoft Visual J++ and the Microsoft Java Virtual Machine, thanks to Microsoft's rejection of standard Java technology for calling

native code. Flexible logging services also allow you to record and recognize problems in running systems.

Administration/management tools

Netscape provides several development and system management tools to assist you through the Web application project life cycle. Most of the major tools provided are built in pure Java and run on any Java 1.1.5-compatible environment. An application generator lets you

When do you need more than a regular Web server? Find the answer online.

www.nwffusion.com



design simple Web forms and reports along with the queries necessary to get data for them. Hard-core developers can use a programming interface to the server for full access to the more complex application server capabilities. Project management and deployment tools help deal with automating the distribution of your application from development and test platforms to production systems.

Netscape Application Server includes an integrated remote administration and real-time graphical system monitoring tool. With it, you can manage access to applications, balance loads across multiple servers, and start and stop individual applications or an entire server. A scrolling window displays real-time critical server performance characteristics including CPU and disk load. Flexible server logging options include the ability to log information to a database. You can

also be notified via e-mail when crashes and other major system events occur.

The Deployment Manager and Project Manager tools make deploying applications across multiple systems much easier. Developers use the Project Manager to specify a package of application code modules, templates and static content. You can easily deploy projects to any Netscape Application Server by opening a project and selecting the server to deploy it on. To minimize downtime, you can update applications on running servers without shutting down the server.

Installation and documentation

Installing Netscape Application Server is simple. The software installs a Web server plug-in used for feeding requests to Application Server. You select directories to copy the software to, enter an administrator password and restart the system.

Netscape Application Server comes with ample printed and online HTML documentation. Both provide well-written overviews of the system, demonstrate product features and detail reference information. Inexperienced Web application designers are guided through some simple interactive samples. Experienced Web professionals will find the reference information covers the necessary details effectively and simply.

Machado is the president and chief technical officer of Mobility.Net, a provider of Web mail and electronic commerce solutions for network businesses. He can be reached at mike@mobility.net or www.mobility.net.

How We Did It

We set up Netscape Enterprise Server 3.5 and Netscape Application Server 2.1 on two identical Pentium Pro servers running Windows NT Server 4.0 to build Web applications for querying, updating and reporting database information.

We accessed the applications serially and with 5,000 simultaneous simulated concurrent users. We measured latency and throughput for each configuration.

YOU KNOW YOUR NETWORK IS SECURE... BUT WHAT ABOUT YOUR INFORMATION?



Protecting your network from security threats is one thing, but how secure is your information? The fact is, in typical organizations, valuable information is extremely vulnerable to threats from the outside and inside.

Now there is a decisive defense against external and internal assaults on your information. **SignaSURE™** from Datakey. SignaSURE is the first affordable family of products that combine software and smartcard technology to provide a new level of information security. With the easy-to-implement SignaSURE, what you know (a password) combines with what you have (a smartcard) to assure absolute privacy for your documents. You'll know if any unauthorized changes have been made to your documents and there will be no question as to who sent them.

Simply put, there's only one way to completely assure the security of your information. SignaSURE. In fact, we're so sure you'll agree that we'll give you a FREE evaluation kit including a sample smartcard and reader.

To see if you qualify, call **1-888-328-2539** now. Or visit Datakey at www.datakey.com.

Datakey®

407 WEST TRAVELERS TRAIL, BURNSVILLE, MN 55337 PH: 612.890.6850 FAX: 612.890.2726



Spycam server puts 'Net's eye on you

Some of the most fun Web sites are those that include almost-live photos taken by so-called spycams. How can you add this personal touch to your intranet? One way is with Microplex Systems, Ltd.'s NetworkEye/270 Frame Server.

This tiny device, not much bigger than a pack of cigarettes, hooks up to a Connectix Corp. Color QuickCam video camera. Plug a 10Base-T cable into its other port and your hardware is set up.



Quick takes on high-tech toys by Test Center Director **Lee Schlesinger**

Software setup is not much more difficult. You must assign the NetworkEye a TCP/IP address. You can do this using Address Resolution Protocol (ARP), Reverse Address Resolution

Protocol or Boot Protocol. We used ARP.

We issued a single command assigning an IP address to the Ethernet hardware address marked on the bottom of the unit. A tiny manual walks you through this process and clearly describes how to customize and troubleshoot the device.

At this point, you have a working frame server. If you go to any Web browser and enter the IP address you assigned to the device, you can get a snapshot of whatever the QuickCam is pointing at. You can even make the image refresh automatically if you have a recent Web browser. We found images refreshed

much faster with Netscape Communications Corp.'s Navigator than with Microsoft Corp.'s Internet Explorer.

You'll want to customize the HTML code of the page NetworkEye displays.

You can add your own title, a pretty frame or a colorful background, and simply embed a line of HTML code with the IMG tag somewhere in the document. You can then move the new

page to the NetworkEye device via File Transfer Protocol.

It's hard to convince Web surfers to visit your site on a regular basis. Letting them peek through a keyhole into your office or out your office window is a good way to promote return visits, and NetworkEye is an excellent vehicle for doing so. ■

Who wants

multiple phone bills?

Now you can get

local, long distance,

data, and Internet

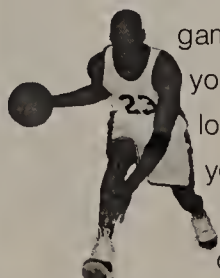
services all from

a single source.

It's definitely not

the same old line.

Until now, when it came to local phone service, your local phone company was the only game in town. But now, there's a new, more versatile player. WorldCom. With WorldCom, you can count on one company to not only provide your local phone service in more than 60 major markets, but your long distance, data, and Internet services, as well. All on its own digital network. All on one bill. So now, the only question is, who do you want on your team?



**WORLD
COM**

1-800-539-2000
www.wcom.com

LOCAL SERVICE THAT GIVES YOU THE WORLD.

Circle Reader Service #8

Next Results

NetworkEye/270 Frame Server **Coolness Meter**

Microplex Systems, Ltd.
(800) 665-7798
(604) 444-1709
www.microplex.com
\$349

**Awesome
Primo
Cool
Wannabe**

BOTTOM LINE

- ▲ A great way to add the excitement of real-time images to your Web site
- ▲ Easy to install, manage and customize

Go online for:

- Links to other frame server hardware products
- A host of other spycams



www.nwfusion.com

May 4-8, 1998 • Las Vegas, Nevada • Las Vegas Convention Center

NETWORLD+INTEROP 98

The Definitive Networking Event

If you're a networking, Internet, telecommunication professional, there's only one place to learn today what the future of networking holds: NetWorld+Interop 98 Las Vegas. NetWorld+Interop's educational programs help you master today's current and emerging technologies. Four Conferences allow you to pursue the topics most critical to your business. Here you will meet and learn from the industry's most acclaimed experts, technologists, authors, inventors and visionaries—the people who are setting the standards for the 21st century.

GENERAL CONFERENCE

Meet and learn from the industry's elite. Over 40 technical sessions designed to help you understand the Internet, manage your corporate intranet, implement high-speed internetworking technologies, learn from the latest industry trends and more.

GENERAL CONFERENCE TRACKS INCLUDE:

- Network Management & Operations
- High Speed Routing & Switching
- Intranets & Networked Applications
- IP Design & Deployment
- Media
- Security
- Case Studies & Industry Test Results

ISP FORUM

NEW

Presented in conjunction with Inter@ctiveWeek

Get to the heart of the toughest issues facing ISPs and network managers. This groundbreaking forum will examine the future of ASDSL lite, xDSL and cable modem technologies, investigate new services for customers such as video, fax and VPN. Shape the future of the industry today.

ISP FORUM TRACKS INCLUDE:

- The Role of Network Service Providers in a Converged World
- Access Opportunities for ISPs
- Managing ISP Growth: Blueprints for Success

To get info or to Register, visit:

www.interop.com

or call 800-944-4629 today!

COMMUNITY CONFERENCE

How will the convergence of data voice and video affect your job? This tightly-focused conference takes a hard look at subjects ranging from computer telephony and integrated applications architectures to voice over IP.

COMMUNITY CONFERENCE TRACKS INCLUDE:

- Data, Voice & Video Applications in the Enterprise
- Converged Platforms for Enterprise Networks
- The Role of Network Service Providers in a Converged World
- Integrated Transport for Data, Voice & Video Applications

ENGINEERS CONFERENCE

The 5th Annual Engineers Conference focuses on Broadband Access, Systems, Services and Technologies. Co-sponsored by NetWorld+Interop and the IEEE Communications Society, this conference features technical papers and speakers from leading institutions around the world. It provides an important forum for network engineers to evaluate the true scope of these challenges and learn methods of transcending them.

Check out over 25 Workshops and 30 Tutorials that cover topics ranging from CTI Concept, Technology and Solutions to Wireless Data Networking.

EAIW8SPC

Learn about networking's tomorrow from those who are defining it today

Management Strategies

Taxing the network

The IRS gears up its Web site to handle the onslaught of last-minute tax filers.

By Loretta Principe

Linda Wallace spent April 15, 1996, on a 24-hour watch. There was a new baby in the house, and no one was sleeping. "I was really worried," says Wallace, chief of electronic information systems for the Internal Revenue Service, in Washington, D.C.

The IRS not only gave birth to a new Web site to supply downloadable tax forms, but it also was expanding its electronic return filing system.

Wallace could only speculate how much traffic would cross the site. Had she leased enough bandwidth and servers to shore up what the IRS already owned? She couldn't be sure. Like any anxious parent, she spent the whole night checking on the baby.

In the wee hours of the morning, when most of the staff was home, a curious traffic pattern developed. "Beepers, conference calls and e-mail messages were humming as we saw the traffic surge briefly every half hour," Wallace says.

The group was baffled for a while, but the mystery was solved when a staffer discovered CNN was running the IRS site address every 30 minutes.

Everything went fine on the eve of the big tax filing deadline, and that was just the beginning. The site received more than 102 million hits the first year. In 1997, hits exceeded 259 million. Volume is even higher this year, and the IRS expects to rack up 10 million hits on April 15 alone.

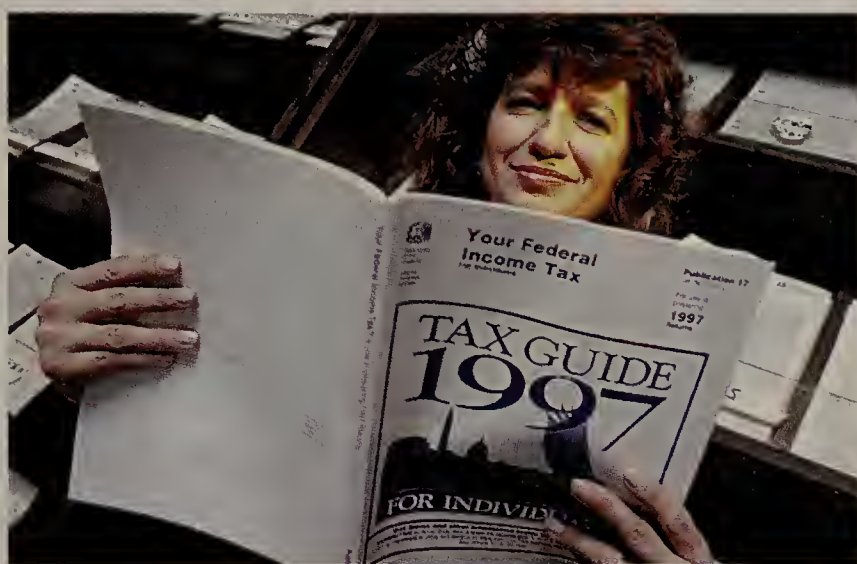
The IRS hopes the expansion of the electronic filing program and the introduction of the Web site will improve the agency's reputation, but one thing is certain — electronic filing will change how you and the IRS handle tax returns.

To use the electronic filing system, you must transmit a completed return to an Electronic Return Originator — IRS-speak for a tax return preparer such as H&R Block.

For a fee ranging from \$10 to \$49, the intermediary firm converts the file to IRS specifications and transmits it via a dedicated line to the IRS. The IRS e-mails you within 48 hours to let you know if your

return was accepted. But even an electronic return needs a signature, so you still need to snail mail your W-2s along with your signature on the prescribed form.

Taxpayers filed more than 118 million individual returns last year, with electronic returns



As chief of electronic information services for the IRS, Linda Wallace is working to make printed tax booklets a thing of the past.

accounting for 6%. Wallace expects electronic filing to account for 10% of the projected 123 million individual returns to be filed in 1998. From the IRS' perspective, electronic returns require far less manpower than paper returns.

The IRS Web site, with its staff of 10, handled as

many returns in 1997 as three mail distribution centers employing a total of 900 people. On top of that, taxpayers downloaded 11 million forms from the site last year, which Wallace says is the equivalent of what's distributed at 500 libraries, post offices and other walk-in sites.

Besides staffing costs, the Web site saves money in other ways. "If someone calls the IRS' toll-free number during tax time and we mail him a form, it costs about \$3. On the Internet it costs less than a penny," Wallace says.

Things get stressful in the IS department during two peak times. The first is late January through early February, when taxpayers receive their tax documents in the mail. Not surprisingly, folks who are getting refunds want to file early, Wallace says.

The other peak begins at the end of March and lasts until the filing deadline. The procrastinators who wait until the deadline generally owe money, have last-minute tax questions or need to download forms and publications.

Wallace leases additional bandwidth and servers for each peak. "This allows us to be flexible and to get a bigger bang for our buck," she says.

For security reasons, Wallace and others interviewed wouldn't discuss systems architecture.

The site, for now at least, is in the toddler stage, and Wallace is ready for this year's horde of procrastinators. This Wednesday, she plans to be sitting at home with her feet up. She invites you to stop by — on the site, that is.

Principe is a freelance writer and attorney in Springfield, Va. She can be reached at LWP@mailexcite.com.

How the IRS serves its employees

Aside from millions of U.S. taxpayers, the IRS has another group of tough customers to please — its employees. Steve Murphy, chief of applications administration for the IRS, handles the intranet IRS employees use to electronically file their own returns.

Murphy's group supplies forms, electronic filing assistance and an online customer satisfaction survey. It took only three months to ramp up for the project, in part because of the experience gained with the external electronic filing system and Web initiative, Murphy says. Staff familiarity with those efforts made it easier for Murphy to sell users on the value of the new intranet.

But internal customers can be even harder to please. The internal electronic filing system and real-time customer survey "have had their rocky moments," Murphy admits. It seems some employees weren't happy with the system, although he declined to comment further.

Even so, Murphy sees a bright future for the electronic filing and real-time messaging system. "What surprises people the most is that the IRS is progressive in its thinking and [is] using technology in ways that are refreshing," he says.

For example, Murphy is working on a project to let end users create and post their own content in the IRS internal messaging and publishing systems. But he won't reveal what, when or how. Acutely aware that a misstep will land on bureaucratic toes, he flatly says, "Mmmm, I don't want to endorse one project over the other."

— Loretta Principe

Are you waiting until the last minute to do your taxes? Get help

online.



www.nwfusion.com

No Boundaries. No Limits.

The world of advanced datacommunications turns on General DataComm's talent for turning innovative vision into technological reality.

Link your career with a company at the forefront of the datacommunications power surge. We provide advanced networking solutions that enable seamless multimedia communications on a worldwide basis, from WAN to multi-service networking, high-speed dialup LAN access to ATM technology.

The future is wide open...all it takes is the determination and the talent to seize the opportunity. Across the nation and around the world, we have outstanding career openings for experienced, goal-oriented, eyes-on-tomorrow professionals as:

- Network Engineers
- Software Engineers
- Marketing/Product Managers
- Hardware/Software Engineers
- Account Executives
- Field Service Engineers
- Systems Programmers

General DataComm is committed to recruiting and retaining the best. As a member of our team, you will enjoy an exceptional compensation and benefits package and a career that itself has no limits. Join the industry leader. Visit us at the Las Vegas Interop Job Fair or at Booth 905 in the North Hall. If unable to attend, reply to: GENERAL DATACOMM, INC., Attn: SN/NW, P.O. Box 1299, Middlebury, CT 06762-1299, FAX: (203) 598-7944, E-mail: scott.nattinger@gdc.com. An Equal Opportunity Employer.



General DataComm, Inc.

Take a look at the hot career potential at the **NetWorld+Interop Career Fair!**

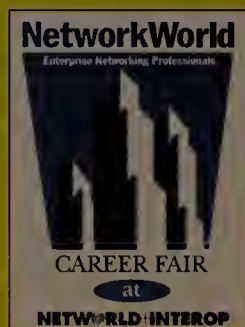
**Stop by and find out what
else is out there!**

Bring plenty of resumes!

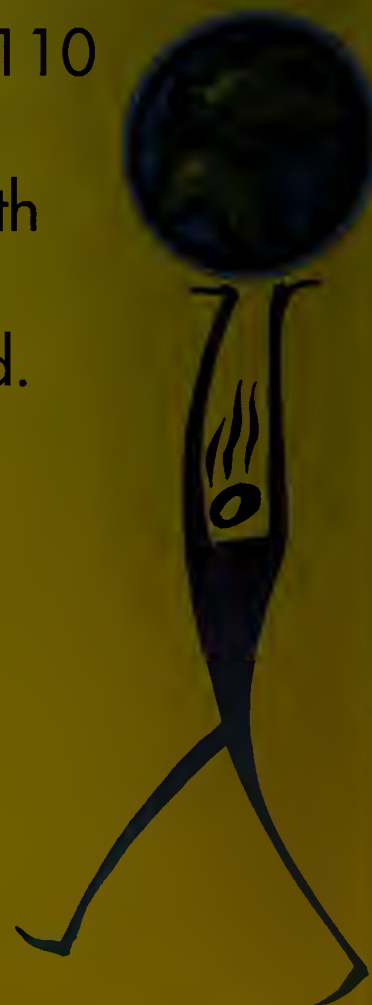
Where: NetWorld+Interop '98
Las Vegas Convention Center
Room N109 & N110

When: May 5th, 6th & 7th

Time: 10-6 Tues. & Wed.
10-4 Thursday



For more info call
800-622-1108
x7510



Celtic Life Insurance, a Chicago based industry leader with A.M. Best's coveted "Excellent" rating, currently has openings in the Chicago loop for I.S. people seeking variety and a wide scope of responsibilities:

PROGRAMMER/ANALYST

Create, debug, test and install application codes; document design specifications and operating procedures; and provide business and technical support to users and programming staff. Qualified candidates must possess 2-4 years experience with AS/400 or Mainframe based application design and programming and COBOL or COBOL/400. 1-2 years insurance industry experience and familiarity with Windows 3.1, 95 and Visual Basic a plus. **Job Code: PA**

BUSINESS SYSTEMS ANALYST

This position is responsible for the research and preparation of functional requirements for system modifications, system design work, workflow analysis, testing of system modifications, training of new applications to staff, and providing user support. Excellent communication, interpersonal and project management skills as well as strong testing and analytical skills are essential. 2-5 years experience as a Business Systems Analyst and experience with health insurance related application systems are required. Health insurance experience is preferred. **Job Code: BSA**

APPLICATION ANALYST

Analyze business system specifications and develop systems for the Corporate division, encode programs, prepare test data, and update programs. Familiarity with Platinum, FRX, HR Vantage software applications, GUI, SQL and Essbase is desired. Proficiency in MS Office 95 and Windows NT, 2 years business experience, and excellent communication, interpersonal and organizational skills are required. Financial software experience preferred. **Job Code: AA**

We offer competitive salaries, personal and professional training and development and a comprehensive benefit package including medical, dental, 401(k), and tuition reimbursement. For immediate consideration, please send/fax/e-mail your resume with salary history/requirements, indicating job code, to: I.S., P.O. Box 06140, Chicago, IL 60606-0140; or Fax: (312) 441-0628; or e-mail: resumes@celtic-net.com. For more information, check out our web site at: WWW.CELTIC-NET.COM EOE

CELTIC

Earning your trust, every day

www.metrocareers.com



CENDANT

Spark Services is one of the fast-growing divisions of Cendant Corp., providing services to over 350 radio stations across the nation and in Europe. We are seeking individuals to help us re-architect and rebuild our core product offering, an interactive voice response system. Our IT department has the following positions available:

SYSTEM ADMINISTRATOR

Minimum 2 years experience in an OS2, Windows 95, NT, and UNIX environment. Familiarity with generic desktop software a plus. Certification desired.

NETWORK ENGINEER

3-5 years telecommunications experience and knowledge of IVR required. Experience supporting a client/server, NT and UNIX environment and degree preferred.

PROGRAMMER ANALYST

Minimum 2 years experience in application development and knowledge of C, HTML, VB, and GUI required. Working knowledge of Intranet a plus. Degree preferred.

SENIOR SOFTWARE ENGINEER

Minimum 5 years in application design and development required as well as skills in C, C++, Oracle, OS2, NT, and UNIX. Disciplines in software development life cycle and degree preferred.

ORACLE DBA

Minimum 5 years DBA experience, supporting Oracle, DBMS in an NT and/or UNIX environment. Desired working experiences include IT architect, physical D/B design of a medium-size application, performance tuning in a high-volume transaction environment. Degree preferred.

The successful candidates will enjoy attractive salaries, excellent benefits that include a stock purchase plan, 401(k), tuition reimbursement and free membership in our services. We offer a progressive environment that's conducive to creativity and professional advancement.

Send your resume with salary history, indicating position of choice to: **Spark Services, Attn: Human Resources, 1603 Orrington Ave., Ste. 700, Evanston, IL 60201.** Fax: 847-475-9961. E-mail: humanresources@sparkservices.com eoe mfdv

SPARK
SERVICES, INC

Take a bite.

Check out MetroCareers today. And give yourself a career advantage.

Register now.

Discover the best IT career opportunities in your neighborhood before they appear in print!

Fill out the questionnaire at www.metrocareers.com

SIGNATURE

Success Through Technology.

In order to maintain our position at the forefront of the direct marketing industry, The Signature Group relies on the latest technology and the greatest technical minds. As we continue to grow and enhance our leading-edge technical capabilities, we seek innovative thinkers who possess solid technical expertise to join our Schaumburg corporate headquarters located in a Northwest Suburb of Chicago.

These positions require prior experience in any or all of the skill sets listed below each job title.

Database Manager

- Oracle, Informix, Sybase

DBA

- Oracle, Informix, Sybase

COBOL Programmers

- CICS, VSAM, TSO/SPF, IBM Utilities

Programmer Tech Specialists

- Relational Database SQL, COBOL, Development UNIX

Sr. Systems Technician

- PC Development tools, Access & FoxPro Database

Sr. UNIX Administrator

- Solaris Administration, DNS, NFS, TCP/IP-Networking, WAN Configuration & Management

Sr. Systems Programmers

- 4GL Informix, C/C++, Visual Basic, SQL, Relational Database, PeopleSoft Financials, Oracle

Telecom Specialists

- Digital PBX background, Lucent, G3R, SL-1, Octel Voicemail, ISDN, T1 Networks

Telecom Project Leader

- 6-8 years telecom project leadership experience

JCL Administrator

- Strong JCL skills, COBOL, basic PC skills

As part of our team, you'll receive an attractive compensation, which includes a complete benefits package. Please send/fax your resume WITH POSITION OF INTEREST to: The Signature Group, Attn: C. Fessett/IDG, 200 N. Martingale Rd, Schaumburg, IL 60173. Fax: 847-330-3433. E-mail: itjobs@sigg.com

We are an equal opportunity employer m/f/d/v



www.thesignaturegroup.com
Hitting Direct Marketing...Head On

Why Search the World Over, When There's No Place Like Home...

THE BEST IT OPPORTUNITIES ARE RIGHT IN YOUR OWN BACKYARD.

We can introduce you to IT opportunities that match your exact requirements and background. Give us information about yourself and the type of opportunity you're looking for by filling out a brief questionnaire on the Web site. Then, using advanced push technology, we'll e-mail you targeted jobs—only those that are the perfect fit.

Register now.

Discover the best IT career opportunities in your neighborhood before they appear in print! Fill out the questionnaire at:

www.metrocareers.com

and register for our free e-mail employment service.



Register now!

Discover the best IT career opportunities in your neighborhood before they appear in print!

Fill out the questionnaire at:

www.metrocareers.com

and register for our free e-mail employment service.

Get the edge.

But there's more to our service than just publishing ads. We can introduce you to IT opportunities that match your exact requirements and background. Give us information about yourself and the type of

opportunity you're looking for by filling out a brief questionnaire on the Web site. Then, using advanced push technology, we'll e-mail you targeted jobs—only those that are the perfect fit.

www.metrocareers.com
and register for our free e-mail employment service.

**S Y S T E M S
A N A L Y S T**
needed for Jersey City, NJ Comp Systems Co. Must have 2yr exp analyzing fin'l s/ware modifications; using C, Fortran, Visual Basic, Paradox & SQL. Respond to: HR Dept, DKB Data Services (USA) Inc, 95 Christopher Columbus Dr, Jersey City, NJ 07302. Fax (201) 200-6122.

www.metrocareers.com

WALL STREET Is EXPLODING!

**TODAY'S MOST DYNAMIC
COMPUTER ENVIRONMENT IS
NEW YORK CITY.**

The unprecedented growth of Wall St. in the past few years has created *unbelievable* opportunities for computer professionals. Aegis Software specializes in providing consulting and full-time placements to all the major brokerage and trading firms in the NY metro area. If you are seeking subcontracting or full-time placement contact us immediately!!

- Analysts/Testers - Automated testing tools
- Internet/Intranet Developers & Administrators
Java, CORBA, ActiveX
- Clearcase, Continuous or PVCS
- Programmers with Unix/C++, NT/C++, Sybase,
(Securities Preferred)
- Oracle/Sybase DBA's
- Unix/NT/Novell Admin
- Network/Systems/Comm Programmers
- Project Management
(Year 2000, Securities Processing, etc.)

Please forward resume to:
Caroline Dickinson
212-268-3100 x117
Fax: 212-244-4119
Caroline@aegissoft.com

Aegis
11 Penn Plaza
Suite 932
NY, NY 10001

Get the details.

When you see a job you like, you can learn more about it by visiting **www.metrocareers.com**. We'll include comprehensive descriptions of the company and opportunity to help you make an informed decision.

**Let Metro
Careers**

Work for You.

Register now.

Discover the best IT career opportunities in your neighborhood before they appear in print! Fill out the questionnaire at:

www.metrocareers.com
and register for our free e-mail employment service.



Business Development Manager

Madge is seeking a top producer from a top-tier networking vendor...

to capture new Token Ring business worldwide. Selected candidate will be responsible for developing partnerships with other OEM's, PC and networking vendors; planning, developing and implementing strategic business development plans and supporting our sales efforts on seven continents. Position is based in San Jose.

If you possess 10+ years sales and business development/strategic marketing experience strong technical knowledge (including LAN's) and a proven track record of initiating, cultivating and completing large scale contracts, we need to talk. Please forward your resume in strictest confidence to: Mr. Dele Abiona, Employment Manager, Madge Networks (New Jersey) Inc., 2 Meridian Road, Eatontown, NJ 07724. Website: www.madge.com. Fax: (732) 544-6460. E-mail dabiona@madge.com. Equal Opportunity Employer, M/F/D/V.



MADGE NETWORKS INC.

Get the edge.

But there's more to our service than just publishing ads. We can introduce you to IT opportunities that match your exact requirements and background. Give us information about yourself and the type of opportunity you're looking for by filling out a brief questionnaire on the Web site. Then, using advanced push technology, we'll e-mail you targeted jobs—only those that are the perfect fit.

www.metrocareers.com

and register for our free e-mail employment service.

Metro Careers

Let MetroCareers Work for You.

We can introduce you to IT opportunities that match your exact requirements and background. Give us information about yourself and the type of opportunity you're looking for by filling out a brief questionnaire on the Web site. Then, using advanced push technology, we'll e-mail you targeted jobs—only those that are the perfect fit.

Register now.

Discover the best IT career opportunities in your neighborhood before they appear in print! Fill out the questionnaire at:

www.metrocareers.com

and register for our free e-mail employment service.

Get inside the: **mind**
Body
SOUL^{of}
R/3



SAP Labs Inc. is a point of origin for the most functionally complete, business application software on the planet. And we've designed our workplace to be equally remarkable.

For the mind, a culture replete with original thinkers, serious challenges and some of the highest credentials in the industry. For the body, amenities that go beyond simple comfort and sustenance. (Gourmet chefs, ergonomic facilities and oak-studded hills are part of the package.) And for the soul, the freedom to shape one's own career in an organization that's flat and adaptive. It's an approach so holistic, some may consider it idyllic.

Still, no one can dispute the results. Today, R/3 is irrefutably the business world's solution for information management. And we're the ones inside it all.

Software Developers • Information Developers • Quality Assurance • Internet GUI Developers • Internet Consultants • Customer Support/Systems Administrators - Basis

SAP Labs seeks highly-credentialed individuals for all positions, (average education level: MS or higher), as well as practical R/3 and ABAP backgrounds. Knowledge of a foreign language, especially German, is useful in SAP's diverse culture, but is not a requirement. In return, we provide each employee an opportunity to thrive in a motivating, personal, and small-company atmosphere - currently just over 300 employees. We offer an outstanding benefits package, including 3 weeks' vacation, flexible hours, free daily lunches and public transportation subsidization. For details on all positions and inside information on the hottest business application software company in the world, visit our Web site:

w w w . s a p l a b s . c o m

To apply for a position at SAP Labs, we prefer that you e-mail your resume in an MS Word or compatible file format to sheila.horgan@jobsatsaplabs.com
FAX: 781-891-9715. PRINCIPALS ONLY, EOE M/F/D/V.



Information Technology Coordinator. Design, implement and administer computer network systems for company offices. Provide technical support in the installation and operation of computer networks. Provide support in the installation and operation of NetFrame super servers, Windows, Windows 95 and Windows NT based PC clients. Troubleshoot network software from Microsoft, Novell and Solomon. Design protocols for interaction between U.S. and foreign offices. Provide support for Btrieve based applications. Provide training for junior I.T. personnel in network and desktop theory and operation. 40 hrs/wk. O.T. as needed, 9 am-5pm. \$55,000/yr. Must have B.S. in any computer science field and two years experience in the position offered or two years experience as a computer system consultant. Applicant must be certified Network Engineer, Microsoft Certified Systems Engineer and Solomon Certified Systems Engineer. Must have experience in NetFrame super server systems and Btrieve databases. Applicants send resumes with Social Security Numbers to Indiana Department of Workforce Development, 10 N. Senate Ave., Indianapolis, IN 46204-2277. Attention D. Gordon include I.D. #3450681.

Implementation Manager/Project Manager: Position being offered involves obtaining client signoffs; managing expectations; planning, organizing, directing, and controlling project activities; responsibility for financial model (revenue and expense); managing team of software engineers, tech writers, industry specialist, analysts, etc.; managing third party content (vendors) of solution; managing multi-million dollar client situations; providing leadership for large S.I. engagements and delivering on client satisfaction, profitability, and growing professional skills of team members. Requires eight years experience in software products, service business, finance industry, open systems technology, and knowledge of fundamentals in large and complex projects. Work 40 hours per week, M-F 8-5. One job is available requiring a Bachelor degree or the equivalent in Computer Science or related field. Salary: \$95,000/yr. Send resumes to Job Service, 500 W. Trade Street, Charlotte, NC 28202. Resume must include Social Security number. Refer to Job Order No. NC2606314 and DOT Code 189-117-030.

Scientist: (Los Alamos, New Mexico). Research & handle projects requiring modeling, data mining, & prediction involving processing & understanding the data supplied by client; perform data mining using feature selection techniques to select important inputs; dev models using linear & non-linear techniques such as principle component analysis, partial least squares regression, artificial neural networks, clustering & fuzzy system; implement the dev models in MS Windows environment using MS Visual C+++. Must have a Ph.D in Computer Sci or Physics with concentration on Data Mining or Artificial Neural Network Modeling for Information Extraction/Prediction using Fuzzy Logic. One yr exp in the job offered or one yr exp as a Software Engr. Related exp must include data mining research using neural network & Fuzzy logic; MS Windows software developing using OOA/D, adv numerical analysis & MS Visual C+++. 40 hrs/wk, \$60,000/yr. Applicants send resume to N.M. Dept. of Labor, 301 W. DeVargas, Santa Fe, New Mexico 87501. Job Order No. 426614

Knowledge Engineer: Design, develop, implement and test advanced artificial intelligence and knowledge-based systems for Fortune 500 companies. Build rule-based/constraint-based/case-based applications that can access remote and local data from relational databases. Work with customer in knowledge acquisition and system delivery: use of object-oriented techniques and state-of-the-art development processes; C/C++, CLIPS, GUI tools, Web tools. Presentation and writing skills required. 25% - 50% travel required to client's locations. Min. 2 yrs. exp. in advanced artificial intelligence techniques; M.S. Degree in Computer Science or Computer Engineering; \$60,000/yr., hrs. 9:00am-5:30pm, 40hr/wk; Job in Irving, TX. Resumes required. Apply at the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 70701. J.O. #TX0241570. Ad paid by an Equal Opportunity Employer.

ADVERTISEMENT

ASSOCIATE RADIO (RF) ENGINEER

Perform Radio Frequency (RF) design, systems optimization & system performance. Complete demographic analysis of different markets with MapInfo. Perform site testing with Spectrum Analyzer & Watt Meter. Design processes with FDMA, TDMA & Cdma theory. Produce propagation studies using software tools such as Excel, MapInfo, MS-Windows, DOS & InterAccess. **\$38,000/year 40 hrs/wk.** Bachelor of Electrical or Electronics Engineering & 1 year exp. in job offered or 1 year related experience as a Electronics Engineering or Research Assistant to include use of noted skills in job duties. *Send 2 resumes or apply in person to the GA Dept. of Labor, Job order # GA6208112. 1535 Atkinson Rd. Lawrenceville, GA 30243-5601 or the nearest Dept. of Labor Field Service Office.*

Computer Science. Software Engineers needed to rsrch/dsgn & dvlp internet/intronet software using C, Assembly, HTML. Exp must include 2 yrs of rsrch/dsgn/dev't of internet browser prog. and software dev't using HTML. Req: Must have 5 yrs exp leading software prjcts. Solory DOE. Send od & resume to: Dovid Stevenson, Novonyx, Inc., 764 E. Timponogos Parkway, OREM, UT 84097. EOE.

NETWORK DESIGNERS (COLUMBUS, OH)

\$\$\$ Excellent Base plus % Gross Profit on each job! Do YOU want to get rewarded for doing a profitable job? Call NEWCOME ELECTRONIC SYSTEMS, we are in search of high level professional and experienced candidates to design and project cost/estimate voice and data network (LANs) communication solutions for clients. RCDD would be a plus!

For CONFIDENTIAL CONSIDERATION call KELLY FOX, Director of H.R. at (614) 848-5688 or forward resume to Newcome Electronic Systems, 9005 Antares Ave. Columbus, Ohio 43240, or e-mail Kelly.Fox@Newcome.com or fax (614)848-9921. **SIGN ON BONUS!**

For More Information About Advertising in Network Careers
1-800-622-1108

NetworkWorld

Fusion

**Try Network Fusion,
Careers, for Job Listing**
<http://www.nwfusion.com>

Where can you source the TOP Network IS Professionals?

- ◆ 157,500 Qualified Subscribers
- ◆ Fortune 500 coverage
- ◆ Portfolio of Recruitment Services

TALK
TO
NETWORK
WORLD

**RECRUITMENT
ONLINE
WWW.NWFUSION.COM**

- @ ONLINE CAREER LISTING
- @ BANNER ADVERTISING
- @ BRAND BUTTONS
- @ WEEKLY NEWSLETTER
- @ EMAIL LIST RENTAL

NETWORKING CAREERS

For information about placing a recruitment advertisement, talk to Network World:

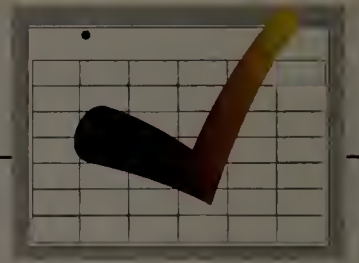
Dodi Rabinovitz (800) 622-1108 x7454; E-Mail: drabinov@nww.com

Jim Parker (Southern United States, and New York); (800) 622-1108 x7542; E-Mail: jparker@nww.com

Karima Zannotti (Northern United States); (800) 622-1108 x7488; E-Mail: kzannott@nww.com

Networking Careers ♦ 161 Worcester Rd, Framingham, MA 01701 ♦ E-Mail: ccapp@nww.com ♦ 800-622-1108 x7510 ♦ Fax: 508-820-0607

NetworkWorld



Mark your
calendars for
these important
Features
coming soon.

Issue	Special Feature	Ad Close
4/20	Special Issue: The Network World 200; Other topics covered: The Next 40; The Stalwarts Best Practices; Who is Zooming Who?; What is in a Name? Special Focus: Intranet Applications; Bonus Distribution: Comdex Spr./Windows World, Chicago	Apr 8
4/27	Management Strategies: What it's like to be a security cop; Special Focus: Solaris application update; Buyer's Guide: Web-to-host connectiv- ity tools; Bonus Distribution: IT Forum (San Fran- cisco) INTRANET	Apr 15
5/4	Management Strategies How Universal Studios run their Networks; Feature: Switching grows up; Special Focus: FCC update; Network world Career Fair at Network+Interop; Bonus Distribution NetWorld+Interop(Las Vegas)	Apr 22
5/11	Annual Network Management Survey; Special Focus: Storage area networks	Apr 29
5/18	Feature: How to write an RFp for a VPN; Review: NT Administration Tools; Special Focus: HTML update	May 6
5/25	Feature: Tolly on token-ring switching; Review: MS Site Server 3.0; Special Focus: Multilayer Switching	May 13
MAY	INTRANET	April 24

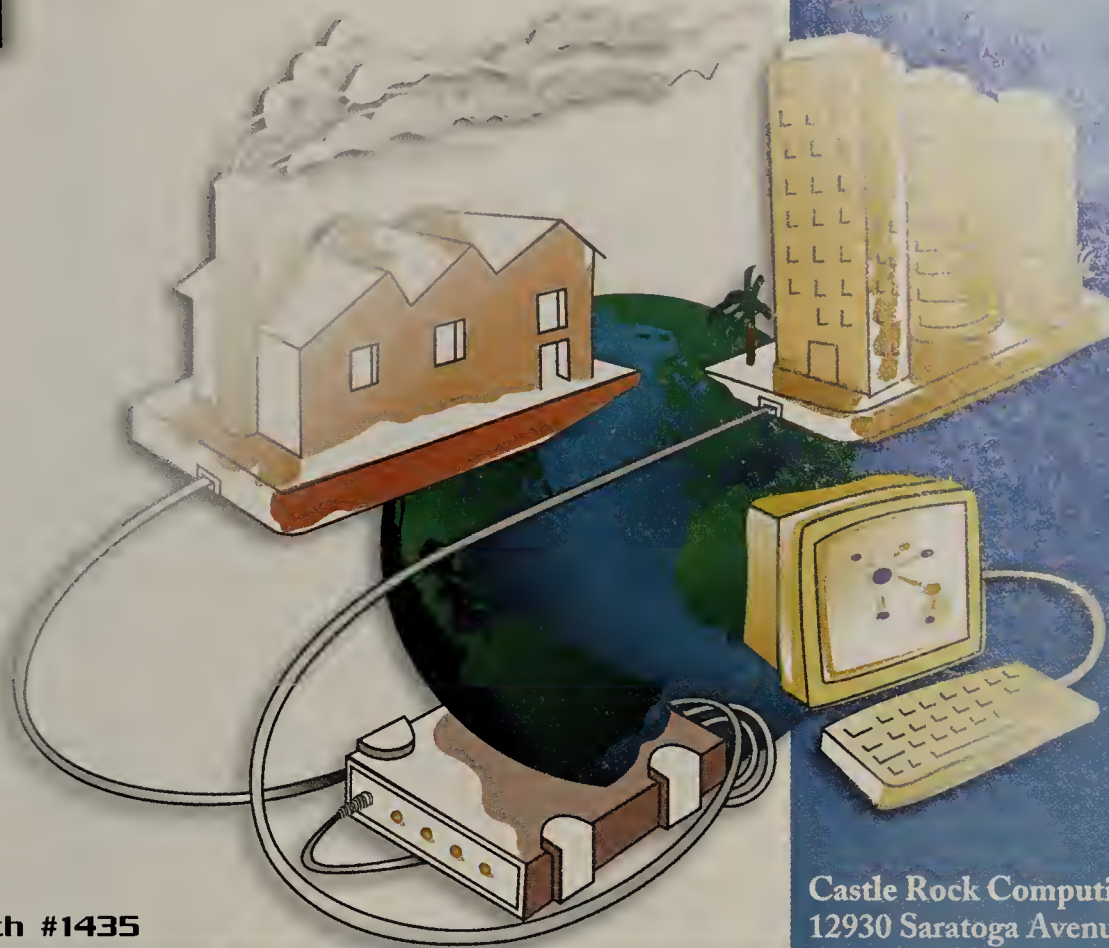
For more information or to
place an advertisement,
please call the Recruitment Dept.
at 1-800-622-1108 x7510.

SNMPc NT

Distributed Network Management

- Distributed Architecture Scalable to 25,000 Devices
- Multiple Console Logins
- Automatic Baseline Alarms
- View/Report TopN Statistics
- Scheduled Printed and WEB Reports
- Derived MIB Data, Including Utilization and Volume
- RMON and Device Specific Applications
- Runs Under Windows NT and Windows 95

Please see us at N+I, booth #1435



Castle Rock
Computing

Castle Rock Computing, Inc.
12930 Saratoga Avenue
Saratoga, CA 95070

Tel: 408-366-6540
Fax: 408-252-2379

SNMPc and CiscoWorks for Windows Users
Call Now for Special Trade-up Pricing

<http://www.castlerock.com>

Reader Service No. 300

Headache free remote access.

VPN

Our new IntraPort™ Virtual Private Network (VPN) Access Server and VPN Branch Office Routers are nothing short of remarkable. By removing the remote connection from the phone company and outsourcing it to the Internet, your users can now connect to corporate network resources reliably, securely, and at a fraction of the cost of traditional private networks. **INCREASES RELIABILITY AND SECURITY / DECREASES ADMINISTRATION OVERHEAD / RUNS IP AND IPX / NO LONG DISTANCE CHARGES / AUTOMATIC FAILOVER TO ON-DEMAND ISDN OR ANALOG / DIGITAL AUTHENTICATION AND ENCRYPTION / SUPPORTS SPEEDS UP TO T1** Compatible Systems' VPN is simply a better way for companies to provide remote access.



Compatible Systems the virtual leader

FOR MORE INFORMATION AND A **FREE** COPY OF *VPN: THE REMOTE ACCESS SOLUTION*, CALL OR VISIT OUR WEBSITE.

► **1-888-356-0283** www.compatible.com/vpn_now

Reader Service No. 238

A SOFTWARE ONLY 32-BIT NETWORK ANALYSIS APPLICATION

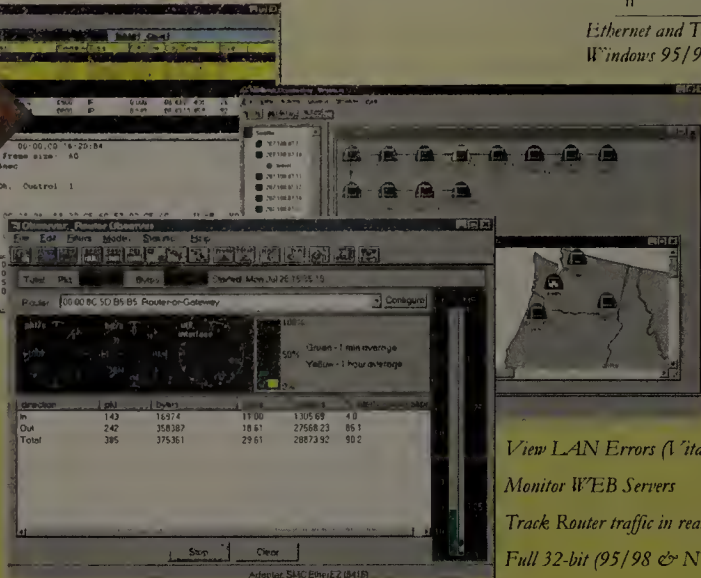
SO FULL OF FEATURES, YOU WON'T BELIEVE THE PRICE

\$695.

Ethernet and Token Ring,
Windows 95/98 and NT

**NEW
VERSION!**
Now Includes
Mapping and
Errors by
Station

Capture and decode Protocols
Monitor Bandwidth Utilization
Grade LAN Efficiency
Track Long-Term Statistics
Auto-discover Addresses
Set Triggers and Alarms
Software Only Solution



View LAN Errors (Vital Signs)
Monitor WEB Servers
Track Router traffic in real time
Full 32-bit (95/98 & NT Only)

OBSERVER™ 4.5

If you have network slowdowns, would you know if they are due to overloaded bandwidth, broadcast storms, or errors? Observer will show your LAN traffic in real time, and with this information, help you pinpoint problems. Once the source and

cause is found, solutions and action plans become clear. Start seeing what you have been missing! Call 800-526-7919 for a FREE DEMO or download from our web site.

www.networkinstruments.com

**NETWORK
INSTRUMENTS**

© 1997 Network Instruments, LLC - Corporate Headquarters (612) 932-9899 FAX (612) 932-9545, UK and Europe +44 (0) 1474 702427 FAX +44 (0) 1474 707830 Internet: info@networkinstruments.com www.networkinstruments.com
Observer™, Network Instruments™ and the "N" logo are trademarks of Network Instruments, LLC Minneapolis, MN USA

Reader Service No. 290

Certified TimePlex Equipment

*Guaranteed Lowest Price
for Certified Timeplex
Equipment*

All hardware is
pre-tested and
staged. If it
doesn't say



then it's not!



Sell • Warranty • Fast Turnaround

ALL TIMEPLEX EQUIPMENT

FDDI
LINK/2+
LINK/1
LINK/100

CSU
MICROLINK
MINILINK
ROUTERS

TIME/LAN
TIME/PATH
MICROPLEXER
OEM

For information on our competitive prices, call

TimePlex Group

1-800-726-LINK ext. 1777

or Fax: 1-813-531-2102

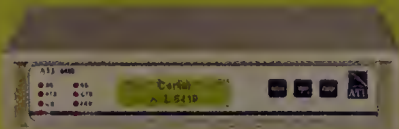
Reader Service No. 239

level and exper...
data cable technicians for...
Virginia location. A...
Send...
English...
must work...
vacation...
must work...
(3" x 8")...
ne Expert...
troubleshoot...
in under 2...
routers, routers...
switches...
videocor...
Product...
edge to...
codecs, me...
drivers, on...
WANTED: DDS Line Expert
with ability to troubleshoot
DDS failures in under 2
minutes. Must work with Telco
to resolve problems. Can
communicate in plain English
with co-workers. Must work
7x24, no sick leave or vacation
available. No salary. Must work
in small cubicle (3" x 8").

Meet Your New Hire: ATL's 6410 CSU/DSU with I.Q.*

The newest member of our staff!

*INTELLIGENT QUANTITATIVE PARAMETRIC TESTING



**Smarter than the
Average CSU/DSU!**

CALL FOR A WHITE PAPER ON THE 6410 with I.Q.

Find out how you can get a

FREE "Smarter than the Average CSU/DSU" t-shirt!

For more info, Call 1-800-223-9758

Email: info@atli.com

Visit our web page at www.atli.com

- Attenuation
- Background Noise
- Impulse Noise
- DDS operating mode
- C.O. loopback conditions

AMERICAN TECHNOLOGY LABS
Quality Network Access Solutions



Reader Service No. 302

GNAT



Global
Technology
Associates, Inc.

Box

The Simple, Powerful & Affordable

Firewall

- Proven Firewall Technology
- Network Address Translation
- Unlimited User License
- High Performance
- Transparent Network Access
- Easy to Configure & Use
- Remote Web Based Management
- Minimal Hardware Requirements
- Ideal for Intranets
- Cost Effective

\$ 995.00

1-800-775-4GTA

Web: <http://www.gnatbox.com>

Email: gb-sales@gta.com

Tel: +1-407-380-0220 Fax: +1-407-380-6080

Reader Service No. 292

Size means everything.

*integrated
access*
DACS

**Inch for inch,
Eastern Research
gets the most
bandwidth out of a
tight situation.**

By any measure, Eastern Research's DNX – Digital Network Exchange proves that good things do, indeed, come in small packages.

Occupying just 10 inches of rack space, the DNX is compact, yet roomy enough to house Integrated Access Device and DACS capabilities for more than 44 T1/E1 circuits. But wait, there's more. The DNX offers T3, xDSL, data and voice integration for maximum flexibility. All of this, plus advanced network management and the protection of full redundancy enable you to deploy with confidence. So whether you are a network service provider or a corporate end-user pressed for the room to expand, the DNX delivers big-time results. Today's performance, tomorrow's capabilities – an intelligent choice by any measure.

See Us at
NetWorld+Interop
Booth 3065

**Eastern
Research**
Products as Solutions

Control Multiple Servers with a single Keyboard, Monitor, Mouse

Keyport 2000 includes all cables at NO CHARGE



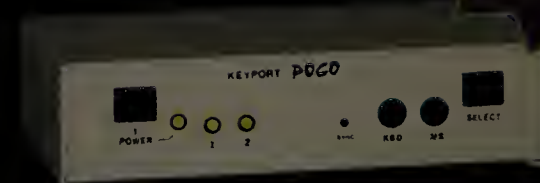
Front-panel LCD allows you to NAME and DISPLAY server selected!

SUPER VALUE ON 12 AND 16 PORT MODELS

connect-tek, inc.

manufacturer of switches, racks, LAN furniture

Keyport
Values
Made by Connect-Tek



\$295

Phone

(516) 981-3311

www.connect-tek.com • 153 TRADE ZONE DRIVE • RONKONKOMA, NY 11779 • FAX (516) 981-3828

Reader Service No. 253

MIRALINK
CORPORATION

180 South 300 West, Suite 130
Salt Lake City, UT 84101

www.miralink.com

Your Continuity Is Our Business

ph 801-575-5465 • fax 801-532-5465

Uptime Monitor For Windows 95/NT \$495

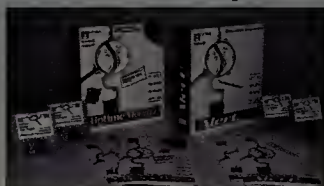
- Monitors any SNMP compatible device
- Simple user interface, i.e. red is bad/green is good!
- Notifies network manager of device alarm via display, audible, email, or pager
- Internet/remote monitoring—no distance limitation
- User friendly—2 minutes to install/20 Minutes to learn

Alert! For Windows NT \$295

- Converts NT event log entries into SNMP traps
- Allows Internet/remote event log monitoring via Uptime Monitor, HP OpenView, Tivoli, or CA Unicenter

NLMAlert For Netware \$295

- Converts console error messages into SNMP traps
- Provides Alerts for server security, configuration changes, Server Console Activity, Disk Mirroring/Duplexing Status, etc.
- Allows remote console monitoring of error messages



Reseller Inquiries Welcome

Reader Service No. 241

Increase Your Exposure with NetworkWorld's Response Card Decks!

Issue Date: May 22nd
Ad Close: April 13th

Plus, receive bonus distribution at
PC Expo, New York City

Network Termination Access

ATM

All in this one box.



HyNEX HUNT 7100

- Guaranteed End-to-End Service Level Commitment
- Performance Monitoring, Policing, Shaping and Billing Tools
- Hot Swappable Interfaces for Media / Rate Adaptation
- LAN Network Termination Access
- Greater Customer Flexibility
- Supports OA&M Standards
- Pricing Starts at \$5,000

June 1-5, 1998



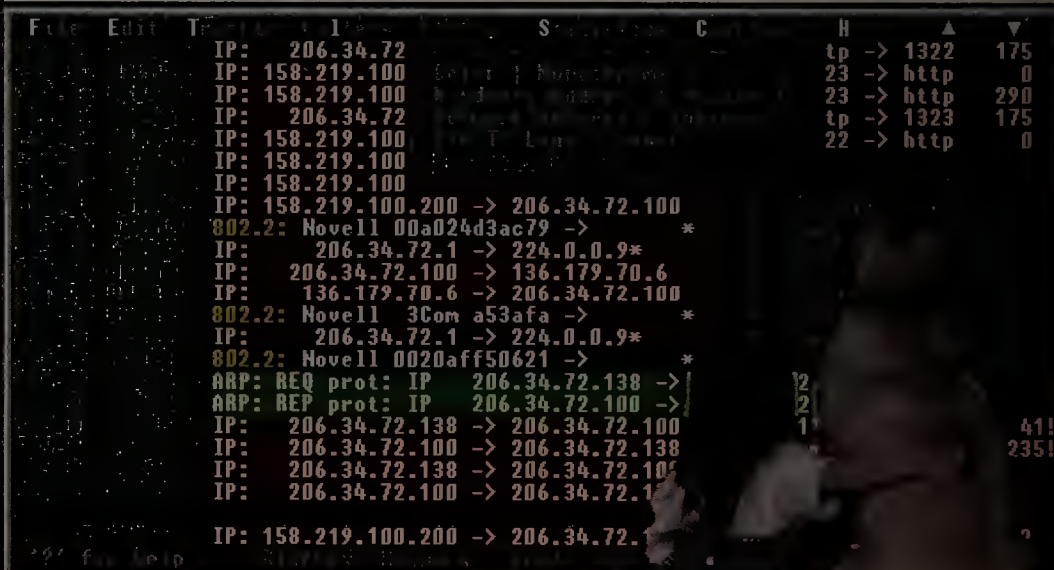
HyNEX Switching to Affordable ATM

Tel: +972-9-970-4110 • Fax: +972-9-970-4210 • email: info@hynex.com
P.O.Box 286, Shefayim 60990, Israel • http://www.hynex.com

Reader Service No. 299

WHO SAYS??

"Network Monitors are confusing and hard to use."



They obviously
aren't using...

LANWatch®

Network Protocol Analyzer



Unlocking the complexity
of Network Analysis

Customize LANWatch!
Source Code
for Parsers and Filters
is included!!!

PRECISION

Guesswork



Five Central Street, Topsfield, MA 01983

(508) 887-6570 (phone)

(508) 887-6552 (fax)

http://www.guesswork.com

Email: info@guesswork.com

Reader Service No. 254

Affordable 10/100/1000Mbps

10/100 Network Cards

Gigabit Network AdapterRCall for Prices

3COM Fast EtherLink XL

Auto-sensing 10/100 PCI RJ45 network adapter .
(3C905-TX)Call for Prices

INTEL PRO/100 TX PCI

High performance 10/100 32 bit, RJ45, server adapter.
(PILA8460).Call for Prices

INTEL PRO/100 TX PCI

High performance 10/100 PCI RJ45 network adapter.
(PILA8465B)Call for Prices

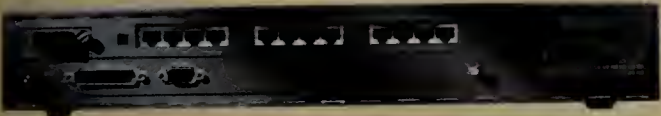
Hubs

3COM SuperStack II

Dual speed auto-sensing 10/100 hub.
12-Port (3C16590). \$1,170 24-Port (3C16591). \$1,849

BAY NETWORKS

BayStack 100BASE-TX RJ45 stackable Hub



12-Port (AT2202001)\$1,409 24-Port (AT2202002)\$1,930
D-LINK Standalone Desktop Hub
100Base-TX hub



8-Port (DFE-808TX)\$405
12-Port (DFE-812TX)\$729
16-Port (DFE-816TX)\$899

INTEL Express

12-Port 10/100 stackable hub
(EE110TX12)Call for Prices

Accton Dual-speed CheetahHub

10/100 connectivity for servers and PCs.
12-Port (EH3012B)\$929 24-Port (EH3024B)1,755

NBASE MegaStack 100 - Fast Ethernet Hub System
12 100Base-TX RJ45 Ports (NH1012)\$1,300



Switches

3COM SuperStack II Switch 1000

The Switch 1000 provides 12 switched Ethernet ports
and one 100BASE-T port. (3C16901A)\$1,065



3COM SuperStack II Switch 3000

12 switched 10/100Mbps RJ45 ports
(3C16942A)Call for Prices

Acclaim EtherWAN 2000 Switch Family

16/24/32 10/100Mbps RJ45 ports.
(16-port)..\$3,459 (24-port)..\$5,169 (32-port)..\$6,899



Accton Managed Switch

8 switched 10/100 auto-sensing ports.
(ES3008-TX)\$1,399

BAY NETWORKS BayStack 28115R/ADV LattisSwitch
A Fast Ethernet Switch with 16 RJ-45 ports for
supporting 10/100Mbps. (28115R)\$7,459

BAY NETWORKS 303/304 Switch

12-2410BaseT ports and one 100TX port.
12-Port (AL2001E05)\$955

24-Port (AL2001E04)\$1,279

BAY NETWORKS BayStack 350T

16 10/100 auto-sensing ports.
(AL2012E01)Call for Prices



BAY NETWORKS BayStack 28200

Modular 4 Slot Chassis. (AQ2012E01)\$1,695

Cisco Catalyst 1900

24 port 10Base-T switch with one 100Base-TX port.
(WS-C1900)\$1,520



NBase MegaSwitch II 10/100/1000

The only 10/100 auto-sensing switch with 8-ports and
2-slots to offer Fiber up to 110Km, ATM, and Gigabit
Ethernet -- All in one box. (NH2012)\$2,900
Gigabit Ethernet Module (NH2002/GE/M)\$2,495

NBASE MegaSwitch

16-port 10/100 auto-sensing switch (NH2016)\$2,799

NBASE MegaSwitch

16-port 10/100 auto-sensing (UTP)and 4 slots for
optional uplinks to upgrade to 32-port, SNMP
(NH2032)\$4,479

NBASE MegaSwitch 228 (24+2+2)

24 10Base-T Ports, 2 auto-sensing 10/100 ports, and



slot for 2 optional 100Base-TX/FX uplinks.

(NH228-10)\$2,330

NBASE MegaSwitch

32-port 10Base-T switch with 2 optional 10/100 ports
(NH234-2MP)\$2,330

NBase MegaSwitch 100

7-port 100FX SNMP fiber switch
(NH2007FO/M-2R)\$4,877

Remote Access

ADTRAN T1/FT1

TSU LT V.35, CSU/DSU. (1202060L1)\$659



ASCEND Pipeline 75

ISDN bridge with IP/IPX routing,unlimited users, 2 POTS,
compression, and built-in NT1. (P75-1UBRI)\$639

ASCEND Pipeline 130

Pipeline 130 Router ISDN BRI, built-in NT1, IP/IPX
(P130-UBRI-V35)\$1335

CISCO 2501 Router

1 Ether port/2 serial ports



(Cisco2501-CH)Call for Prices

CISCO 2509 Router

1 Ether port/2 serial ports/8 Asynchronous ports.
(Cisco2509- CH)\$2,139

CISCO 776

ISDN Access Router including NT1, 2 pots,
and 4 port hub. (Cisco776-CH)\$729

Osicom Router Mate Plus

T1/FT1 Router with CSU/DSU and IP/IPX support.
(RouterMATE-Plus)\$1,229

Transceivers

NBase

100Base-TX to 100Base-FX Transceiver.
(NX3101)Call for Prices

NBase

10Base-T to AUI/BNC/FL Transceiver.
(NX300)Call for Prices

Call for Current Pricing on Any Manufacturer's Products

1-800-FOR-LANS
1-800-367-5267
sales@west-hills.com



WEST HILLS
LAN SYSTEMS

7949 Woodley Avenue, Van Nuys, CA 91406
Technical Support: 818-773-8171
Fax: 1-818-773-8932

Visa/MasterCard/Discover/American Express • Fast Delivery • Most Orders Ship The Same Day • Prices Subject To Change Without Notice

BECOME A MICROSOFT® CERTIFIED SYSTEMS ENGINEER

The Mindworks Complete MCSE Self Study Kit

OVER \$5000 WORTH OF TRAINING FOR ONLY \$995

The NT 4.0 Study Kit includes:

- 3 module NT 4.0 Administration Video Series*
- 5 module NT 4.0 Core Video Series*
- 6 Study Guides with CD ROMs covering Networking Essentials, NT Workstation, NT Server, NT Server in the Enterprise, TCP/IP and your choice of elective
- Trial Versions of Windows NT 4 Workstation and Server
- Prelim Test Preparation Software for the MCSE providing test simulation for all four core tests and three electives.



CALL 1 800 874 1516

www.mindwork.com



MINDWORKS
PROFESSIONAL EDUCATION GROUP, INC.

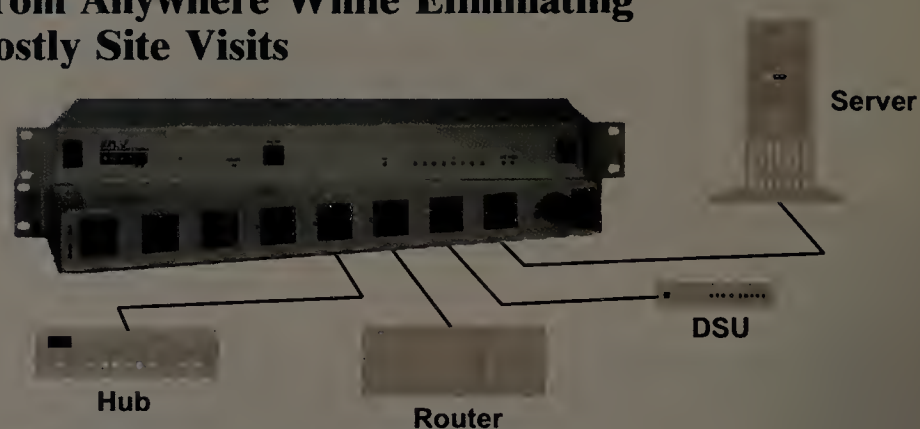
4141 N. GRANITE REEF RD. STE. 101 SCOTTSDALE, AZ 85251
602 874 1500

* Video series digitally produced and edited on Windows NT 4.0

Reader Service No. 295

REBOOT Remote Equipment

From Anywhere While Eliminating
Costly Site Visits



- Through your Ethernet network with RPC-3 (8 receptacles)
- Through your phone line with RPC-2 MD01 (6 receptacles)
- Through your EIA232 connection with RPC-2 (6 receptacles)
- Dial-up power control and console port monitoring with one unit the DS-RPC. (4-12 console ports, 4 receptacles)

*** All units are password protected, have a local EIA-232 port for onsite access or use with external modem for dial backup, have programmable names for individual receptacles, support commands which turn on/off or reboot all or individual receptacles, and have built-in surge suppression.

ALSO AVAILABLE: Solutions for in-band and out-of-band console port monitoring. Please contact us for all remote site management product information.

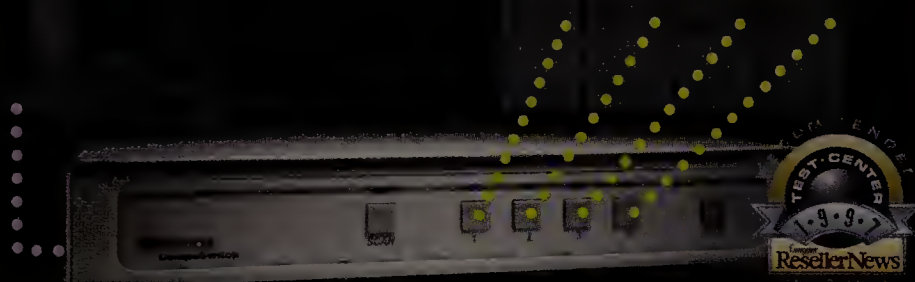
BayTech



Toll Free: 800-523-2702 International: 228-467-8231
Fax: 228-467-4551 WEB: www.baytechdcd.com

Reader Service No. 262

Control Two to Eight PCs From One Keyboard, Monitor and Mouse



CompuSwitch™

- All PC brands and operating systems
- Flawless PC booting and operation
- Mix PCs with PS/2 and serial mouse ports
- High-resolution video
- Tangle-proof PC cables

2-Channel \$385

4-Channel \$595

8-Channel \$895

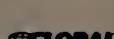
Call Today! 800-724-8090 x18



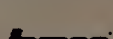
800-525-4727



800-642-8816



800-440-4832



800-547-5444



800-328-2261



Rock-solid reliability for
computer access and control

Raritan Computer, Inc.
400 Cottontail Lane
Somerset, New Jersey 08873

E-mail: sales@raritan.com
<http://www.raritan.com>
Fax: 732-764-8887
Tel: 732-764-8886

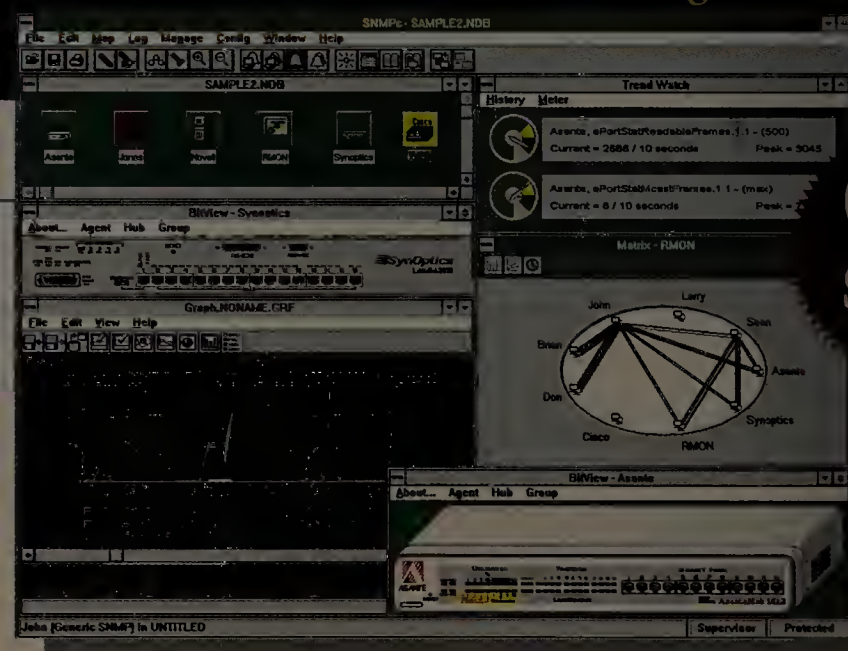
RESELLER INQUIRIES INVITED

FULL YEAR WARRANTY

Reader Service No. 314

SNMPC

Network Manager for Windows



**Only
\$795**



- Full RMON Support
- Integrates with HP OpenView
- TCP/IP, Telnet, TFTP, BOOTP
- WinSNMP/WinSock/DDE APIs
- SNMP, ICMP, IPX Polling

- Node Discovery
- Long Term Statistics/Thresholds
- Custom Event Actions/Forwarding
- Over 100 Device Specific GUIs
- MIB Compiler/Browser



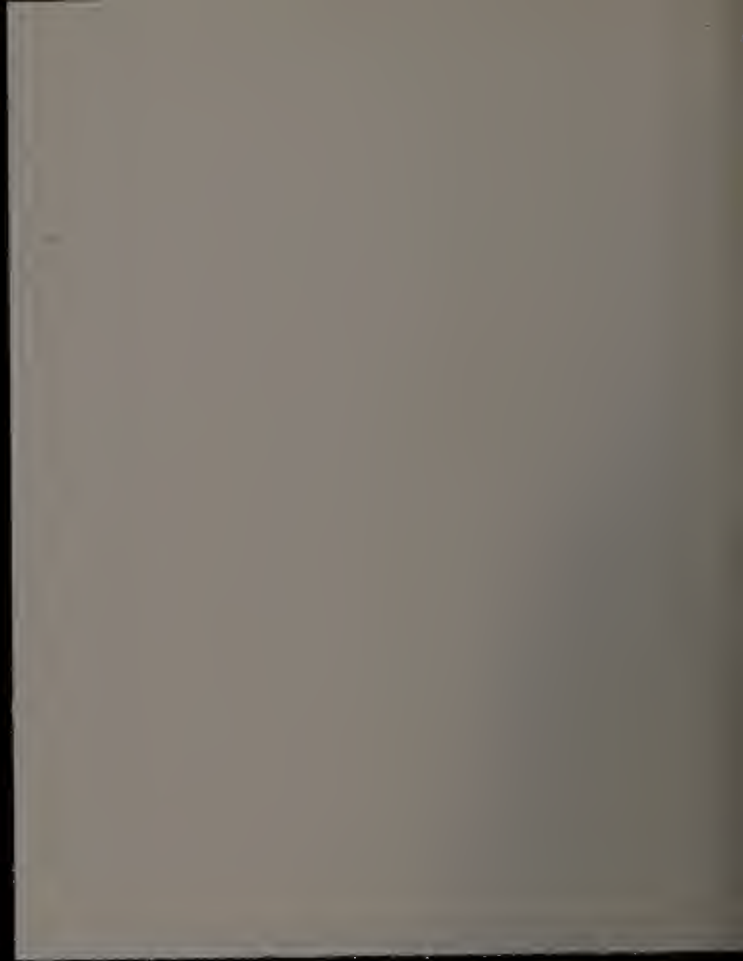
**Castle Rock
Computing**

Please see us at N+I,
booth #1435

408-366-6540
Fax: 408-252-2379

Reader Service No. 252





Why Limit your Server Access?

All KVM switches allow a single user to access and manage multiple computers from one keyboard, video monitor and mouse. But as your data center grows and you need multiuser capability, most switches limit server access with bottlenecks and restrictions.



True multiuser switching

The **AutoBoot Commander 4xP** is the only KVM switch designed from the ground up to take you wherever your business leads.

True multiuser, multiplatform operation gives you and your staff access to all of your servers no matter how many you have or where they are located. Dozens of users can manage and maintain thousands of computers without blocking or interruptions from other users.



Cybex Computer Products Corporation | www.cybex.com | 1-800-932-9239

Cybex, the Cybex Logo, AutoBoot, Commander and 4xP are trademarks or registered trademarks of Cybex Computer Products Corporation. Microsoft, Windows NT, Novell, NetWare, Banyan and LANtastic are trademarks or registered trademarks of their respective manufacturers.

Reader Service No. 227

LAN/WAN • BUY/SELL
MODEMS FULLY WARRANTED
DSU/CSU'S NEW/REFURBISHED
MULTIPLEXERS RENTAL
T-1 EQUIPMENT LEASE
HUB, BRIDGES, ROUTERS, ETC.

Fibermux AT&T Synoptics
CISCO SPECIALISTS

Cabletron Bay Networks
We carry all manufacturers, call John, ext. 101.

<http://www.adcs-inc.com>
PHONE
800-783-8979
FAX (916)
781-6962

ADCS INC.

Circle Reader Service No. 240

Do You Offer Training or Educational Services?

If so, find out about our NEW "Training Directory"

Call Enku at
800-622-1108
ext. 7465

NETWORK HARDWARE

"Over 15 Years of Exceptional Service"

**ROUTERS • DSU/CSU
TERMINAL SERVERS
HUBS • SWITCHES**

BUY/SELL/LEASE

**CISCO
ASCEND
LIVINGSTON**

BAY • 3COM • ADTRAN • KENTROX

800-230-6638

**Ph: 805-964-1314
Fax: 805-964-5649**

www.networkhardware.com

NETWORK HARDWARE
6445 CALLE REAL, SUITE B
SANTA BARBARA, CA 93117

Circle Reader Service No. 244

For More Information on Advertising in Network World's Marketplace

1-800-622-1108

MSI
Communications Inc.

For more than 10 years we've been providing the best in new and preowned equipment from ALL the key vendors and brand leaders. We'll prove it! Call us and ask for your preferred manufacturer.

- Cisco Systems
- Bay Networks
- Paradyne
- Livingston
- Newbridge Networks
- 3Com/U.S. Robotics
- Motorola/Codex/UDS
- Micom
- Ascend Communications
- Kentrox
- and more

Multivendor solutions with a turnkey approach delivers ON THE MARK EQUIPMENT... WITHOUT THE HIGH MARK-UP

Preowned equipment available for sale, rent, or lease.

Our rebuild/preowned process is unique. We upgrade firmware/software, memory and include cables, manuals, CD and software, and more. Our equipment is staged and foam packed.

MSI is different, and the better value. Here's our checklist to prove it.

Compare:

- Large Inventory
- Quick Delivery
- Overnight Replacement Service
- 24 X 7 Engineering Support
- Design Assistance
- Staging and Configuration
- On-site Installation
- 100% Satisfaction Guaranteed

Visit our Web site: www.msic.com

Circle Reader Service No. 232

CLEAN UP YOUR ACT!

NETWORK FURNITURE

FACTORY DIRECT

By Computer Comforts

LOOK:
www.ComputerComforts.com

CALL:
281-488-2288

Circle Reader Service No. 235

SNMP Tools

Multiple Agent Simulator

Develop, test, demonstrate Management applications without real devices.

Automated Agent Tester

Complete weeks worth of manual testing in minutes.

SIMPLESOFT Inc.
Tel: (650) 965-4515
Web: www.smplsft.com

Circle Reader Service No. 267

REFURBISHED



Bay Networks



Largest Inventory of Refurbished Bay Networks in America!

- Bay Networks Trained
- Bay Networks Authorized
- Hundreds of pieces in stock
- New and Used Equipment

- Proven Track Record
- One Year Warranties
- Design and Install Services
- Technical Support







On-Sight Router Installation

WE REPAIR ALL BAY NETWORKS!

National LAN Exchange 888-891-4BAY

(4 2 2 9)

1403 W. 820 N. Provo, UT 84601 FAX 801-377-0078 <http://www.nle.com>

C.O.D.'s • VISA • Mastercard • Discover • Terms

Circle Reader Service No. 231

Buy/Sell/Trade, New & Used

NETWORKING

Routers • Switches • Hubs

CISCO, BAYNETWORKS, CABLETRON

ASCEND
FORE
3COM
CHIPCOM

Visit Our WEBSITE @ www.bizint.com

NY Office/Sales:

Tel: (315) 458-9606

Fax: (315) 458-9493



Main Office:

Tel: (978) 667-4926

Fax: (978) 663-0607

Circle Reader Service No. 219

SMC

proteon

KALPANA

CHIPCOM

SynOptics

1-800-AKA-ECOM

WE BUY AND SELL NEW/USED






★ NEW ★

SPECIALS

3 Com HUBS & SWITCHES

SUPER STACK 2 - IOBASE-T SWITCHES

12 PORT W/TX 3C16901A	\$1159
24 PORT W/TX 3C16900A	\$1599
12 PORT W/2 10/100-320 MODEL	\$699
12 PORT P540 HUB/SWITCH-3C16405	\$439
24 PORT P540 HUB/SWITCH-3C16406	\$799
12 PORT IOBASE-T HUB-3C16670	\$295

SUPER STACK 2 - IOBASE-TX SWITCHES & HUBS

AUTO 10/100 12 PORT 3C16942A	\$1449
SWITCH 3000 5 IOBASE-FX-1 TX	\$5709
12 PORT IOBASE-TX HUB-3C2508-TX	\$799
12 PORT 10/100 BASE HUB-3C16590	\$1099
24 PORT 10/100 BASE HUB-3C16591	\$1699

OFFICE CONNECT SWITCHES AND HUBS

SWITCH 140-3C16730 W/4 IOBASE-T & 1 TX	\$649
SWITCH 140M-3C16731-SAME AS 140 W/MINGMINT	\$669
HUB TP 140-3C 16723 W/4 IOBASE-TX PORTS	\$198
TP1200-3C16721 W/12 IOBASE-TX PORTS	\$525

NETWORK ADAPTERS

3C905TX 10/100 PCI	\$6099/100 PACK
3C900TPO IOBT PCI	\$1300/20 PACK
3C509B-TPO IOBT IS	\$4099/100 PACK
3C509B-COMBO IOBT ISA	\$6900/100 PACK

BAY NETWORKS BAYSTACK:

101 12 PORT IOBT	\$529
102 24 PORT IOBT	\$899
150 24 PORT IOBT W/MINGMINT	\$799
153 12 PORT NO NMM	\$419
152 16 PORT IOBT COAX	\$319

INTEL NETWORKING

12 PORT 10/100 HUB...	\$979
24 PORT 10/100 HUB...	\$1569
8 PORT IOBASE-TX HUB	\$329
24 PORT IOBASE-TX SWITCH	\$1509
8 PORT 10/100 SWITCH	\$2039

★ USED ★

3C509-TP	\$40
3C16671	\$650
3C16670	\$250
3C16900	\$1400
BAY 3308 8	\$650
BAY 5308 P	\$2395
BAY 3304-ST	\$700
18M 8228 MAU	\$95
CISCO CSM6C6	\$1200
3C6555B-016R	\$9000
CHIPCOM 5102M-F8P	\$550
CHIPCOM 5108M-TP	\$550
CABLETRON TPMIM-24	\$795
CABLETRON MRXII	\$200
NETWORTH UTPM-S	\$600
KALPANA EPP211	\$250

★ USED ★

3C509-TP \$40

3C16671 \$650

3C16670 \$250

3C16900 \$1400

BAY 3308 8 \$650

BAY 5308 P \$2395

BAY 3304-ST \$700

18M 8228 MAU \$95

CISCO CSM6C6 \$1200

3C6555B-016R \$9000

CHIPCOM 5102M-F8P \$550

CHIPCOM 5108M-TP \$550

CABLETRON TPMIM-24 \$795

CABLETRON MRXII \$200

NETWORTH UTPM-S \$600

KALPANA EPP211 \$250

ONE YEAR WARRANTY ON ALL USED EQUIPMENT

MUCH, MUCH MORE!!! PLEASE CALL!

Prices May Vary according to Quantity

Se habla español

Quantity, Reseller, Government & Education, Discounts available.

ERGONOMIC ENTERPRISES INC.

47 WERMAN CT PLAINVIEW, NY 11803

PH: 516-293-5200 FAX: 516-293-5325

AUTHORIZED PRODUCT & SERVICE CENTER

WE TEST ALL PARTS BEFORE WE SHIP

Circle Reader Service No. 271

Data Communications Specialist

ADC Kentrox

Adtran

AT&T/Paradyne

BAT Electronics

Bay Networks

Cray/Datatel

CISCO

Codex

Micom

Motorola

N.E.T

Newbridge

Paradyne

Racal Datacom

UDS

New - Refurbished

Bridges

Channel Banks

DSU/CSU's

Hub/Switches

Frame Relay

ISDN

Modems

Multiplexers

Routers

T-1/FT-1

Voice/Data

X.25

Information Data Products Corp.

1-800-362-3770

<http://www.planet.net/idpc>

Quality Products • Competitive Prices • Immediate Deliveries

Pre and Post Sales Support

Circle Reader Service No. 273

USED CISCO DIRECT

Save up to 80% on new/used:

Routers • Switches • T1 CSU/DSUs

ISDN • ATM • Fast Ethernet • Frame Relay

WE BUY USED

• CISCO

• Adtran

• ADC Kendrox

• www.digitalwarehouse.com

• Your Information Superhighway Discount Source

• Motorola

• Livingston

• General Datacom

• Boy Networks

• Paradyne

• 3COM/USRobotics

• Modge

• Ascend

• Fore

• IBM

• Xyplex

1-888-89-CISCO

210-20 23rd Ave. Suite #2, Bayside, NY 11360 Phone: 1-888-892-4726 Fax: 718-281-1186

Circle Reader Service No. 259

NetWorld+

Interop

NetWorld+

Interop

NetWorld+

Interop

Don't miss the May 4th issue of



Network World with bonus distribution

at NetWorld+Interop in Las Vegas!

Issue Close: April 22

Call Enku Gubaie

1-800-622-1108 ext. 7465

Circle Reader Service No. 283

Category 5

Premium Patch Cords

Our Patch Cords exceed the EIA/TIA 568a specification.

- Contacts: 50m gold platin
- Wire: 24 Awg. stranded, Category 5
- Stranded wire is very flexible
- Molded strain reliefs available
- Available in Black, Ivory, White, Red, Gree, Blue, Yellow, Gray, Hot Pink, Orange & Purple

3 ft	1.45
6 ft	1.90
10 ft	2.50
15 ft	3.25
25 ft	4.75

In Lots of 5
11 Colors Available

ELECTRO PRODUCTS • Call 1-800-423-0646

Or fax your request to (253) 859-9101

Bulk Wire

CAT 5 pvc	AS LOW AS	\$65.00
CAT 5 plenum	AS LOW AS	\$190.00
19" Data Rack		\$126.00

CAT 5 Patch Panels

12 PORT Mini	\$55
24 PORT	\$85
48 PORT	\$170
96 PORT	\$330

All Patch Panels are UL & EIA/TIA Verified

Outlets

CAT 5 Inserts	3.20 ea
Faceplate	1.00 ea

Fiber Optic Cords

5T-ST Duplex 62.5/125	\$23.00
-----------------------	---------

Circle Reader Service No. 246

NOVELL UPGRADES TO 4.11 INTRANETWARE

5 User.....	\$340
10 User.....	\$575
25 User.....	\$725*
50 User.....	\$975
100 User.....	\$1295*
250 User.....	Call

*Limited time offer

Netware for SAA v2.0

16 sessions..... Call

64 sessions..... Call

128 sessions..... Call

254 sessions..... Call

Microsoft NT Microsoft Office 97

Call us First!

We accept

Government and

School P.O.s

Check with us for all of your Cisco, 3Com, SMC and Shiva hardware needs.

All trademarks and trade names are the property of their respective holders.

COM 1-800-251-0170

NET CNE on Staff

Circle Reader Service No. 249

Livingston

Ascend

CISCO, BAY NETWORKS, CABLETRON, SYNOPTICS

3Com

Adtran

Motorola

US Robotics

Micom

Specialist in all Cisco products including Memory

LAN/WAN Products

New, Used, Lease, Rent

Codex

Xylogics

Wellfleet

We carry all Manufacturers

Millennium Solutions Group, Inc.

• Routers, Bridges

• DSU/CSU's

• Switches, ATM

• Frame Relay

• Hubs, Modems

• Voice over Data

We Buy and Sell

888-801-2001 Fax (916) 797-9997

Visit our Web Site at:

<http://www.millenniumsolutions.net>

Circle Reader Service No. 293

buy/sell/new/used

REFURBISHED

data comm equip

50% off / 1-year warranty

ATL

Adtran

Cisco

Coastcom

Micom

Motorola ISG

N.E.T.

Paradyne

RYDER Communications, Inc.

P. (973) 702-7781

1-888-RYDRCOM

F. (973) 702-8496

Rydrcom@aol.com

www.rydrcom.com

Circle Reader Service No. 293

NETWORK WORLD, INC.

THE MEADOWS, 161 WORCESTER ROAD, FRAMINGHAM, MA 01701-9172
(508) 875-6400/FAX: (508) 879-3167/TTD 1-800-441-7494

CIRCULATION

Sharon Smith, Senior Director of Circulation
Richard Priante, Director of Circulation
Bobbie Cruse, Assistant Circulation Director
Mary McIntire, Circulation Assistant

IDG LIST RENTAL SERVICES

Elizabeth Tyle, Sales Representative
P.O. Box 9151, Framingham, MA 01701-9151
(800) 343-6474/(508) 370-D825, FAX: (508) 370-0020

PROFESSIONAL DEVELOPMENT GROUP

William Reinstein, Senior Vice President/Business Development
Debra Becker, Sr. Marketing Manager
Christie Sears, Finance/Operations Manager
William Bemardi, Senior Product Specialist
Peter Halliday, Product Manager/NetDraw
Andrea D'Amato, Sales Manager/Strategic Partnerships
Sharon Schawbel, Event Planner
Betty Amaro, Operations Specialist
Maureen Whiting, Marketing Specialist
Jennifer London, Sales Associate

ONLINE SERVICES

Ann Roskey, Director, Online Services
Jean-Olivier Holingue, Director of Technology
Clare O'Brien, Online Sales Manager
Pam Kerensky, Web Information Specialist
Andrea Duksta, Web Producer Specialist
Jolene Springfield, Online Adv. Operations Specialist
FAX: (508) 270-8869

INFORMATION SYSTEMS/IMAGING SERVICES

Michael Draper, Vice President Information Systems
Jack McDonough, Director of Systems and Technologies
Rocco Bortone, Network Administrator
Kevin O'Keefe, Desktop Services Manager
John Chambers, Groupware Technologist
Anne Nickinello, Digital Imaging Manager
Deborah Vozikis, Senior Imaging Specialist
Sean Landry, Imaging Specialist

Colin Ungaro, President/CEO
Evilee Thibeault, Senior Vice President/Publisher
Mary Kaye Newton, Assistant to the President
Eleni Brisbois, Senior Sales Associate

ADMINISTRATION

Mary Fanning, Vice President Finance and Operations
Frank Coelho, Office Services Manager
Paul Mercer, Finance Manager
Lisa Smith, Telecommunications Administrator
Tom Garvey, Mailroom Supervisor
Tim DeMeo, Mailroom Assistant

HUMAN RESOURCES

Monica Brunaccini, Director of Human Resources
Danielle Volpe, Sr. Human Resources Representative

MARKETING

Kristin Wattu, Marketing Communications Manager
Barbara Sullivan, Market Research Analyst
Donna Kirkey, Marketing Design Manager
Melissa Bartlett, Marketing Specialist

GLOBAL PRODUCT SUPPORT CENTER

Joanne Wittren, Senior Global Marketing Services Manager
Cindy Panzera, Marketing Specialist

ADVERTISING OPERATIONS

Karen Lincoln, Director of Advertising Operations
Ann Jordan, Senior Advertising Account Coordinator
Marlo Matoska, Advertising Account Coordinator
Sandy Weill, Direct Response/Recruitment Ad Coordinator

PRODUCTION

Ann Finn, Production Director
Greg Morgan, Production Supervisor
Cathy Sampson, Print Buying Supervisor

RESEARCH

Ann MacKay, Research Director

DISTRIBUTION

Bob Wescott, Distribution Manager/(508) 879-0700

IDG

Patrick J. McGovern, Chairman of the Board **Kelly Conlin**, President **Jim Casella**, Chief Operating Officer

Network World is a publication of IDG, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. IDG publishes over 275 computer publications in 75 countries. Ninety million people read one or more IDG publications each month. *Network World* contributes to the IDG News Service, offering the latest on domestic and international computer news.

SALES OFFICES

Carol Lasker, Associate Publisher

Internet: clasker@nww.com

Debbie Lovell, Senior Sales Associate
(508) 875-6400/FAX: (508) 879-5760

NEW YORK/NEW JERSEY

Tom Davis, Advertising Director/Eastern Region

Elisa Scheuermann, District Manager

Internet: tdavis, elisas@nww.com

Aimee Damiani, Sales Assistant

(201) 587-0090/FAX: (201) 712-9786

NORTHEAST

Donna Pomponi, Senior District Manager

Kevin Gasper, District Manager

Michael Eadie, Account Executive

Internet: dpomponi, kgasper, meadie@nww.com

Wendy Calileo, Sales Assistant

(508) 875-6400/FAX: (508) 879-5760

MID-ATLANTIC

Jacqui DiBianca, Senior District Manager

James Kalbach, Account Executive

Internet: jdibian, jkalbach@nww.com

Barbara Stewart, Sales Assistant

(610) 971-1530/FAX: (610) 975-0837

MIDWEST/MARYLAND

Rick Groves, Senior District Manager

Internet: rgroves@nww.com

Barbara Stewart, Sales Assistant

(610) 341-6025/FAX: (610) 975-0837

CENTRAL

Dan Gentile, Midwest Regional Manager

Internet: dgentile@nww.com

Kristin Ashton, Sales Assistant

(512) 249-2200/FAX: (512) 249-2202

NORTHWEST

Sandra Kupiec, Advertising Director/Western Region

Paula Connor, Senior District Manager

Susan Rastellini, District Manager

Carol Stiglic, District Manager

Karen Lim, District Manager

Lisa Bennion, Account Executive

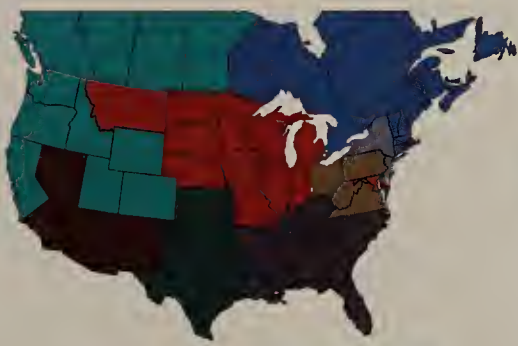
Internet: skupiec, pconnor, slr, cstiglic, klim, lbennion@nww.com

Shannon Dempsey, Sales Operations Manager

Mark Hiatt, Sales Assistant

Jim Fox, Sales Assistant

(408) 567-4150/FAX: (408) 567-4166



SOUTHWEST

Amy C. Bartulis, Senior District Manager

Internet: abartuli@nww.com

Becky Bogart, Sales Assistant

(714) 250-3006/FAX: (714) 833-2857

SOUTHEAST

Don Seay, Senior District Manager

Internet: dseay@nww.com

Terry Sanders-Prentice, Sales Assistant

(770) 394-0758/FAX: (770) 394-6354

DIRECT RESPONSE ADVERTISING

Response Card Decks/Marketplace

Joan M. Bayon, Director Direct Response Advertising

Richard Black, Account Manager

Enku Gubaie, Account Executive

Sean Weglage, Account Manager

Kate Berlandi, Account Manager

Internet: jbayon, rblack, egubaie, sweglage, kberlandi@nww.com

Sharon Chin, Sales/Marketing Operations Manager

Chris Gibney, Sales Assistant

(508) 875-6400/FAX: (508) 628-3976

RECRUITMENT ADVERTISING

Dodi Rabinovitz, Senior Recruitment Director

Carla Cappucci, Sales Associate Central U.S. Territory

James Parker, Account Executive

Karima Zannotti, Account Executive

Internet: drabinov, ccapp, jparker, kzannotti@nww.com

(508) 875-6400/FAX: (508) 820-0607

EDITORIAL INDEX

3Com.....	6	Lockheed Martin.....	1
A		Lotus.....	6,27
America Online.....	27	M	
Ameritech.....	1,6	MCI.....	6
Ancor.....	23	Microplex Systems.....	49
ArrowPoint.....	17	Microsoft.....	8,12,17,31,41
AT&T.....	6	N	
B		Neo Networks.....	23
Banyan.....	12	Net-IT Software.....	31
Bay.....	1,13	Netopia.....	23
Bell Atlantic.....	1,6	NetReference.....	1
BlazeNet.....	6	Netscape.....	47
C		NetScreen Technologies.....	31
Cabletron.....	1,6,65	NetVantage.....	1
CAI.....	1	O	
Cisco.....	1,6,23,27	Open Text.....	31
Citrix.....	8	Opticom.....	1
Compaq.....	23	P	
D		Perot Systems.....	1
Digital.....	6,65	Proactive Networks.....	23
E		Progress.....	13
EarthLink.....	6	Q	
Extreme.....	1	Quadratek.....	17
F		S	
FNet.....	27	Shiva Corp.....	13
Focal Communications.....	1	Southwestern Bell.....	1
Foundry.....	6	Sun.....	1
FutureNet.....	66	T	
G		Tivoli.....	10
GridNet.....	6	U	
GTE.....	1	US WEST.....	6
H		USWeb.....	66
HP.....	1	W	
I		WorldCom.....	6
IBM.....	1,6,10,23	X	
Indus River.....	13	XaQti.....	17
Intel.....	10,17	XCOM Technologies.....	29
Intelispan.....	6	Xylan.....	17
Internet Tools.....	31		
L			
Level 3 Communications.....	29		

ADVERTISER INDEX

Advertiser.....	Reader Service#...	Page#.....	URL
Alcatel Data Networks.....	1.....	4.....	www.adn.alcatel.com
Am Tech Labs Inc.....	3D2.....	56.....	www.atli.com
Bay Networks.....	9.....	www.baynetworks.com	
Bay Tech.....	262.....	60.....	www.baytechdcd.com
Castle Rock Computing.....	300 252...55, 60.....	www.castlerock.com	
Compatible Systems Corp.....	238.....	55.....	www.compatible.com
Connect-Tek.....	253.....	58.....	www.connect-tek.com
Crystal Group.....	3.....	18.....	www.crystalpc.com
Cyber-Guard.....	4.....	44.....	www.cyberguard.com
Cybex Computer Prod.....	227.....	61.....	www.cybex.com
Datakey.....	5.....	48.....	www.datakey.com
Digital Equipment Corp.....	2-3, 14-15.....	www.digital.com	
DMW Worldwide.....	19.....	13.....	www.dmwworldwide.com
Eastern Research Inc.....	225.....	57.....	www.erinc.com
Exide Electronics.....	6.....	30.....	www.exide.com
Extreme Networks.....	1D.....	68.....	www.extreme.com
FlowPoint.....	11.....	22.....	www.flowpoint.com
Foundry Networks.....	12.....	19.....	www.foundrynet.com
Global Technology Assoc.....	292.....	56.....	www.gnatbox.com
HyNEX.....	299.....	58.....	www.hynex.com
IBM.....	34-35.....	www.ibm.com	
Madge Networks.....	13.....	16.....	www.madge.com
Microsoft Corp.....	2D-21.....	www.microsoft.com	
MindWorks.....	295.....	6D.....	www.mindwork.com
MiraLink Corp.....	241.....	58.....	www.miralink.com
Network Instruments.....	290.....	56.....	www.networkinstruments.com
Network + Interop 98.....	50.....	www.interop.com	
Newbridge Networks Inc.....	15.....	24.....	www.newbridge.com
Osicom Technologies.....	17.....	32.....	www.osicom.com
Paradyne Corp.....	18.....	7.....	www.paradyne.com
Precision Guesswork.....	254.....	58.....	www.guesswork.com
Racal Datacom.....	7.....	4D.....	www.racal.com
Raritan Computer.....	314.....	6D.....	www.raritan.com
Silicon Graphics.....	14.....	26.....	www.sgi.com
Sprint.....	33.....	www.sprint.com	
Sun Microsystems.....	11.....	www.sun.com	
Timeplex Group.....	239.....	56.....	www.timeplex.com
West Hills LAN Systems.....	297.....	59.....	www.west-hills.com
WorldCom.....	8.....	49.....	www.wcom.com
Xedia.....	16.....	29.....	www.xedia.com
Xylan Corp.....	9.....	67.....	www.xylan.com

Network World Fusion - www.nwfusion.com

3Com	Connectronix	MCI
3M	DataKey	Microsoft
ACC	Digital	Milkyway
Adaptec	Elron	Network Appliance
APC	Exide	Network General
Anixter	Hitachi	NetVersant
ANS	IBM	Paradyne
Ariel	Intraware	Plaintree
Attachmate	Information Builders	Siemens
Bay Networks	Intel	SMC
Cabletron	ITT Cannon	Sterling Software
Cisco	Make Systems	Tektronix
Concord		

These indexes are provided as a reader service. Although every effort has been made to make them as complete as possible, the publication does not assume liability for errors or omissions.

* Indicates Regional/Demographic

DIRECTORY OF SERVICES

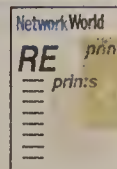
NetworkWorld TECHNICAL SEMINARS

Network World Technical Seminars are one and two-day, intensive seminars in cities nationwide covering the latest networking technologies. All of our seminars are also available for customized on-site training. For complete and immediate information on

our current seminar offerings, dial our instant fax-back service at 800-756-9430 from your touch tone phone or call a seminar representative at 800-643-4668.

NetDraw^{Plus}

Create network diagrams, proposals and presentations fast and easily with *Network World's* NetDraw and NetDraw Plus software. At your fingertips, you will find over 2,000 full color network images, many the complete likeness of your network equipment. Now it's easy to attach text files, Word documents, other programs, or even Web hyperlinks directly to images. You can even embed your finished diagrams directly into Microsoft Office documents. Go to www.netdraw.com to download your free, 30-day trial of this extremely easy-to-use product today. Call 800-643-4668 to order a copy for only \$149! Or get immediate fax-back information by dialing 800-756-9430 and request document code #10.



Publicize your press coverage in *Network World* by ordering reprints of your editorial mentions. Reprints make great marketing materials and are available in quantities of 500 and up.

To order, contact Reprint Services at 612-582-3800 or 315 5th Ave. N.W., St. Paul, MN 55112.

* Our instant fax-back service delivers information on many of these products. Dial 800-756-9430 from your touch tone phone and use the appropriate document code to have information faxed right back to your fax machine!

Portability

Continued from page 1

Regional Bell operating companies have fully implemented the FCC-approved portability method in only five areas: New York, Philadelphia, Chicago, Detroit and part of Maryland. And even in these places, RBOC officials said almost no competitive local exchange carriers (CLEC) are porting numbers.

For years, telecom reform advocates have maintained that number portability is essential to competition because users hate to toss their stationery and rewrite their communications software dialing scripts just to save a little money on their telecom bills. So what's gone wrong?

RBOC and CLEC officials paint a picture of failed database platforms, scalability worries and a lack of understanding by some carriers of their role in the process. And some RBOCs have hesitated to employ portability software because the FCC has yet to deliver a promised scheme to pay for the costs.

Network World has learned the

FCC now is considering a charge ranging from 50 cents to \$1 per month on all business and residential phone lines to recoup the money RBOCs have already spent on portability.

Breaking the pattern

Indeed, the FCC's plan is expensive and ambitious. Until now, the public telephone network has always identified the terminating local carrier via the first three digits, or exchange, following the area code. Today, all 10,000 numbers in each exchange are assigned either to an incumbent LEC or a CLEC, so users switching carriers generally must move to a different exchange, even though their offices stay in place.

The FCC method breaks with this pattern by requiring a consortium of carriers in each of the seven original RBOC regions to establish a comprehensive database of phone numbers matched to local carriers. As soon as one customer in an RBOC exchange switches to a CLEC without changing exchanges, all calls into that exchange must from then on dip into the database to

determine which carrier terminates the call.

But in February, the carrier consortiums in the original Bell South, US West and Pacific Bell regions fired their database con-

May 11 to install its database in the three new regions, and the three affected RBOCs have asked the FCC for additional time to test the system. The FCC granted them waivers to begin

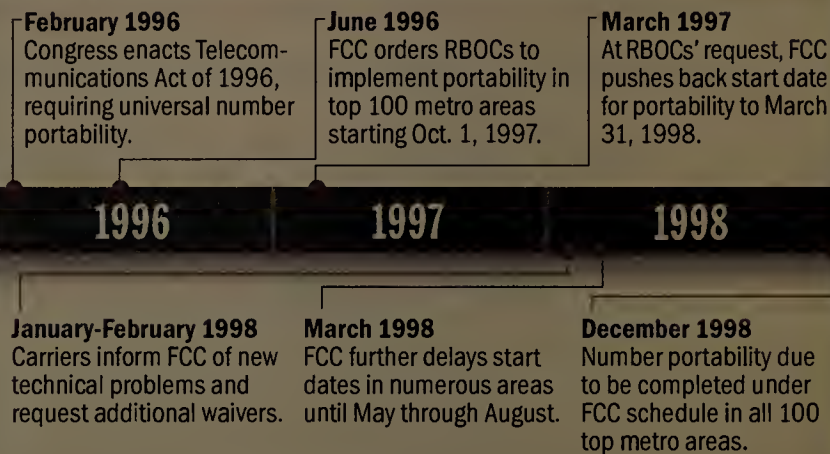
company a waiver until May. Only Bell Atlantic and Ameritech met the March 31 deadline, and their competitors seem to be playing a waiting game to see who is willing to port numbers first.

"We have consciously decided to hold off for some period of time before we jump in whole hog," said John Barnicle, chief operating officer of Focal Communications Corp., a Chicago switch-based CLEC. "This is experimental in nature, and sometimes the devil in the details doesn't come out until you are running hundreds of thousands of transactions through the system."

Some CLECs are offering a rudimentary form of portability, based on delivering the call to the RBOC the customer has just dismissed, then forwarding it to the switch of the CLEC the user has selected. But such call forwarding does not meet the FCC rules, and experts reject it as a viable scalable enterprise application. ■

Frustrated mandate

The long and winding road to local telephone number portability:



Note: Portability now available in New York, Philadelphia, Chicago, Detroit and part of Maryland.

SOURCES: FCC, WASHINGTON, D.C.; BELL ATLANTIC, NEW YORK; AMERITECH, CHICAGO

tractor—Perot Systems Corp.—for lack of delivery. They then hired Lockheed Martin Corp., the database administrator for the other four original RBOC regions. But Lockheed Martin has told the FCC it needs until

portability on a rolling schedule lasting through August.

In addition, Southwestern Bell Corp. told the FCC that signaling software used to coordinate database look-ups wasn't ready, and the FCC granted the

Get more information online
at www.nwfusion.com
DocFinder: 6631

Lava

Continued from page 1

specialized thin servers. This one-size-fits-all nature stems from Lava's object foundation. Because the operating system is built from a set of interchangeable components, the compact Lava core can be tailored to fit each target system, whether it's a handheld computer, Web phone or specialized thin server. More importantly, Lava can be centrally administered and updated

over the network.

The IBM researchers developing Lava have talked with an array of systems providers as well as engineers at JavaSoft, the Sun Microsystems, Inc. company responsible for the JavaOS. According to one JavaSoft engineer, Lava or some portion of it could be used either in place of the JavaOS microkernel or to supplement it. Both IBM and Sun representatives emphasized that neither company has made any product decisions yet.

Lava is being developed at the

IBM Thomas J. Watson Research Center, here. It's being aimed at the embedded systems market, which is exploding as the World Wide Web becomes more pervasive and vendors develop crash programs to build an array of new computing devices to create and access Web information.

These devices are often too small to use traditional operating systems which are large, complex and hard to update. In contrast, Lava is based on a new architecture for creating small, functional operating systems

that can be easily changed, according to Nayeem Islam, manager of network servers at IBM Research and one of Lava's creators.

"A thin operating system architecture is created to provide just the right level of functionality and performance for the required [computing] environment," Islam said.

A personal digital assistant (PDA) has limited memory and no disk, for example. In this kind of "resource-constrained environment, the operating system should provide simple threading, interrupt handling, security and protection," Islam said. But the PDA doesn't need a paged virtual memory or a file system. A Lava operating system with only the needed components could be loaded into the PDA.

All these subsystems are built using a Lava component model with clearly defined interfaces. The result is that components can be added, removed or changed quickly and easily.

Lava supports security through basic features in the operating system, instead of, for example, in the Java Virtual Machine (JVM), which today is responsible for Java security. One Sun security expert, who said he was familiar with the basic premise of the Lava project, sees that shift as a good move. "If you

IBM in the Java world

Some new Java-related technologies from IBM:

- ▶ **Distributed Java:** Reconfigures Java applications in client/server environments
- ▶ **Janimate:** Tracks how Java applications perform inside devices
- ▶ **Java Cards:** Smart cards supporting a Java Virtual Machine
- ▶ **Mockingbird:** Programming tool to write code in mixed-language environments

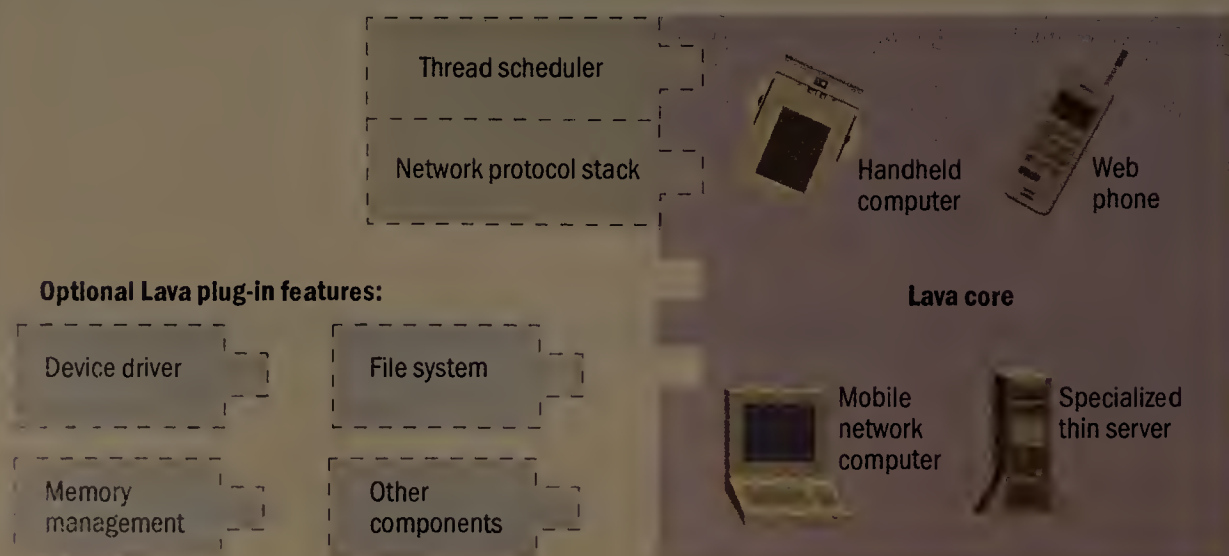
can slice another layer between the [JVM] and the operating system, you can change things and correct some deficiencies," said the expert, who spoke on the condition of anonymity.

IBM currently has no plans to make Lava part of the recently announced JavaOS for Business project, developed by IBM and Sun. "If it were deemed appropriate, Lava could be included," said Art Olbert, vice president of business development for IBM's network computing software group. ■

Get more information online
at www.nwfusion.com
DocFinder: 6633

IBM's Lava project: A thin operating system

Lava has core services to which developers can add various features — such as device drivers and file systems — to tailor a lightweight operating system for an array of thin clients and their servers.



Cabletron

Continued from page 1

Cabletron may also introduce a new version of Spectrum, its network management software, and may announce upgrades to its SmartSwitch line of products. And Benson could announce the promotions of some Cabletron executives.

If the NetVantage acquisition does happen, it would give Cabletron a big boost, said Esmeralda Silva, an analyst at International Data Corp., in Framingham, Mass. Silva said Cabletron needs a cost-effective 10/100M bit/sec wiring group switch, and she compared NetVantage products to Cisco Systems Inc.'s Catalyst 2900

and Bay Networks Inc.'s 350T. "The 350 product is what got Bay over the hump," she said. "The thing that will make vendors competitive is a switch architecture that is able to react to price declines along with the market."

Cabletron's expected announcements this week will remove the code of silence Benson has imposed at the company since March 30, the day he announced he was replacing Don Reed as CEO. Calls to Benson and other senior executives went unanswered last week, and a reporter was told that Don Reed, who is acting as a consultant, no longer has an office at the company headquarters.

Back to the future

Bob Levine, Cabletron's colorful co-founder and former CEO, was at company headquarters for a second week to speak to the sales force. He was also consulting with Operations President John d'Auguste, but a reporter was told that Levine doesn't have an office at the company.

Reed may be gone, but not all of his ideas will be forgotten. A Cabletron spokesperson said Benson is committed to executing the strategies Reed had begun, including developing a greater presence in the channel, a new direction for a company that until two years ago only sold directly.

Taking NetVantage

NetVantage opened shop in 1991 in El Segundo, Calif., and went public in 1995. The company has had a rough time, although it looked as if it would turn around in 1996. Last year, the company posted \$16.9 mil-

lion in revenue, and a net loss of \$18 million.

If Cabletron does acquire NetVantage, the deal could have an almost immediate impact on

PROFILE: NETVANTAGE, INC.

Based: El Segundo, Calif.

Founded: 1991

Management: Stephen Rizzone, president, chairman and CEO; Sharam Hakimi, chief technical officer

1997 revenue: \$16.9 million

Employees: 60

Products: Workgroup Ethernet switches

Cabletron's falling revenue and stock price. Not only would the deal round out Cabletron's low-end switch product line, it would give the company switches that boast the market's lowest prices per port, except perhaps for Extreme Networks' recently announced Summit48 (see NW, April 6, page 56).

"This would be a dynamite way for Cabletron to get into the OEM business," said David Passmore, president of the Net-

Reference, Inc. consultancy in Herndon, Va. NetVantage is sold strictly through OEM agreements, and Cabletron would pick up a lot of channel associations.

On the downside, "I suspect the NetVantage product would lose a lot of its OEM business, because some of these other vendors wouldn't want to be associated with Cabletron," Passmore said.

NetVantage has always been tight-lipped about who it sells to, but several analysts confirmed Hewlett-Packard Co. is among its customers.

The acquisition of NetVantage would give Cabletron immediate revenue in the channel for low-end switches, such as the NV8500 family of Ethernet switches, which offer either eight or 16 10Base-T ports, with two 100M bit/sec uplinks.

Whether buying NetVantage will give Cabletron a quick fix is uncertain, but it makes good on Benson's promise to act quickly.

NetVantage officials were unavailable for comment. Cabletron officials wouldn't comment on the possible acquisition. ■

Cabletron boosts ATM switches

Cabletron Systems, Inc. last week announced two enhanced ATM switches that are 50 times faster and about 50% less expensive than the company's current line.

Previously called SmartCell, the new SmartSwitch 2500 workgroup and backbone boxes feature FastCast, a high-speed processing engine. FastCast sports a 150-MHz dual-processor CPU that can forward LAN Emulation broadcast packets at greater than 100,000 packet/sec. Both boxes support 2.5G bit/sec of switching capacity.

The SmartSwitch includes support for the latest ATM Forum specifications for signaling and routing, such as User-Network Interface (UNI) 4.0 signaling and Private Network-to-Network Interface (PNNI) 1.0 dynamic routing. Cabletron is one of the first companies to ship UNI 4.0 signaling, which defines how virtual circuits are automatically established and then taken down in an ATM network. PNNI 1.0 is a stronger version of Interim Inter-switch Signaling Protocol (IISP). Unlike IISP, which forced users to configure circuits manually, PNNI 1.0 is virtually plug-and-play.

"The more switches you have, the more you want to have PNNI — not only for the features but to keep you sane," said Byron Young, Cabletron's director of marketing for ATM.

Cabletron also has added new high-speed WAN modules to the line, including OC-3, DS-3, E-3 and OC-12. The SmartSwitch 2500 Workgroup switch, with a 12-port OC-3 configuration starts at \$8,495. The SmartSwitch 2500 Backbone switch starts at \$11,995. The WAN interfaces are priced as follows: \$6,995 for the four-port DS-3 and E-3 modules; \$9,995 for the four-port OC-3 module; and \$9,995 for the one-port OC-12 module.

For more information, contact Cabletron at (603) 332-9400.

—Robin Schreier Hohman

New software helps manage busy Digital switches

New software from Cabletron Systems, Inc. will allow users to better balance traffic loads between Digital Equipment Corp. switches.

Cabletron this week will unveil ClearVISN 2.2, which will let users define policies for boosting the performance of Ethernet switches inherited from Digital's Network Products Group. Cabletron acquired this group late last year (NW, Dec. 1, 1997, page 1).

ClearVISN 2.2 also features tighter integration with Cabletron's Spectrum management platform, which will allow users to launch ClearVISN applications from a Spectrum console.

Cabletron is expected to announce ClearVISN 2.2 when it rolls out a new release of Spectrum, Version 5.0 (NW, Feb. 9, page 1). Spectrum 5.0 is expected to have a number of service-level management enhancements, including:

- new software from third parties for service-level and business process management, and advanced fault resolution
- multivendor switch administration applications for accounting, billing and switch provisioning
- Java-based autodiscovery tools for enhanced fault resolution

ClearVISN 2.2 includes a new application called Traffic Policy Manager. Using predefined policies, Traffic Policy Manager will determine which LAN segments are overloaded and decide which workloads could be moved to other LAN

segments via port reassignments. The software will then prompt the network manager to accept or reject the suggested move. Alternatively, Traffic Policy Manager will automatically move LAN workloads away from congested LAN segments until traffic loads are balanced.

This and other ClearVISN applications can now be launched from a Cabletron Spectrum console with the click of a Digital device icon.

With ClearVISN 2.2 and Spectrum 5.0, all Digital network product Management Information Bases are now supported in Spectrum.

ClearVISN users were less interested with this integration than they were with Cabletron's plans for the future of Digital prod-

ucts. "I'm concerned about what's going to happen now that [Cabletron has] bought them out," said Robert Wycoff, network analyst manager at the Colorado Department of Transportation in Denver. "I'm not sure at this point what's going to happen with [ClearVISN] and how they intend to roll ClearVISN into [Spectrum]."

"As long as Cabletron keeps up Digital networking technology, it should be a pretty decent match," said Steve Marshall, senior systems integration analyst at the Injured Workers Insurance Fund, in Towson, Md. "But I guess we'll see."

ClearVISN 2.2 is priced from \$945 to \$19,995. Traffic Policy Manager costs \$1,995. Both products will be available in May. Spectrum 5.0 is available now.

—Jim Duffy

What's new in ClearVISN 2.2

- Tighter integration with Cabletron Spectrum
- Traffic Policy Manager application
- Maintenance for all ClearVISN components
- Support for new Digital network devices
- Free 60-day trial licenses

Network World 161 Worcester Road, Framingham, Mass. 01701-9172, (508) 875-6400
Periodicals postage paid at Framingham, Mass., and additional mailing offices. Posted under Canadian International Publication agreement #0385662. *Network World* (ISSN 0887-7661) is published weekly, except for a single combined issue for the last week in December and the first week in January by *Network World, Inc.*, 161 Worcester Road, Framingham, Mass. 01701-9172.
To apply for a free subscription, complete and sign the qualification card in this issue or write *Network World* at the address below. No subscriptions accepted without complete identification of subscriber's name, job function, company or organization. Based on information supplied, the publisher reserves the right to reject non-qualified requests. Subscriptions: 1-508-820-7444.
Nonqualified subscribers: \$5.00 a copy; U.S. - \$129 a year (except Washington, DC, \$136.74); Canada - \$160.50 (including 7% GST, GST #126659952); Central & South America - \$150 a year (surface mail); Europe - \$205 a year (surface mail), all other countries - \$300 a year (airmail service). Four weeks notice is required for change of address. Allow six weeks for new subscription service to begin. Please include mailing label from front cover of the publication.
Network World can be purchased on 35mm microfilm through University Microfilms Int., Periodical Entry Dept., 300 Zeeb Road, Ann Arbor, Mich. 48106.
Network World is distributed free of charge in the U.S. to qualified management or professionals who meet ALL of the following

criteria:

- 1) Have site purchasing influence.
- 2) Are involved in the purchase of network products and services.
- 3) Have multi-platform networks installed or planned (including network architectures, LAN operating systems and LAN environments).

PHOTOCOPYRIGHTS: Permission to photocopy for internal or personal use or the internal or personal use of specific clients is granted by *Network World, Inc.* for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of \$3.00 per copy of the article, plus 50 cents per page is paid to Copyright Clearance Center, 27 Congress Street, Salem, Mass. 01970.

POSTMASTER: Send Change of Address to *Network World*, P.O. Box 3090, Northbrook, IL 60065.

Copyright 1998 by *Network World, Inc.* All rights reserved. Reproduction of material appearing in *Network World* is forbidden without written permission.



Reprints (minimum 500 copies) and permission to reprint may be purchased from Reprint Services, 3155th Ave. N.W., St. Paul, MN 55112 (612) 582-5800.

USPS 735-730

Finding sex offenders: It's our responsibility

It is curious that despite the online revolution and the explosion of the World Wide Web, the public's access to some crucial information is still limited.

For example, how can you track sex offenders? If you have children, you want to know if convicted offenders are living in your community — because they might be living right next door.

Think about it. How would you know if the Little League coach is a convicted sex offender? How about the woman you send your kids to for day care?

Even worse, does your children's school thoroughly check the credentials of all their staff? How about your church? If you want to do a little checking yourself, you might be interested to know there are a number of relevant Web sites. Check out www.sexoffenders.net and www.childabuse.com to see a couple of attempts to make the information on offenders available to the public.

Unfortunately, these sites just scratch the surface, and their data is incomplete. For example, with more than 1,000 offenders in Ventura County, Calif., sexoffenders.net only shows data on the offenders categorized as "high-risk."

High-risk means they have committed three or more sexual or serious crimes. That's a problem as far as I'm concerned because I'm just as worried about those who have committed only one or two crimes.

I did discover that there is a much more comprehensive database available called the Megan's Law Database (MLDB), which is computerized but is not online. It was named after Megan's Law, which was created following the truly awful case of 7-year-old Megan Kanka, who was raped and murdered by a convicted child molester who had moved into her neighborhood.

Thus it was that I found myself down at the Ventura police station signing a form to get access to the database. The form is a government requirement, I was told, to prevent sex offenders from

getting access to the database for reasons that couldn't be adequately explained by anyone.

The current database contains 73,254 records for California, of which around 1,500 concern high-risk cases. There are 1,254 records for Ventura County, where I live, and 318 in the city of Ventura. Of those 318, five are high-risk. I was shocked to find that

there were 741 cases in California in which the offender was a woman!

In the MLDB, you only get the zip code, not the whole address (and many records are flagged "whereabouts unknown"). You

do, however, get pictures of the offenders and a list of their crimes. But don't try to photograph the screen or you'll be in trouble. You can only take notes.

But shouldn't all of this data be put online, you may be asking? Well, I would say yes, but it looks as if no one has a political interest to do so.

What if we, information industry professionals, were to build a Web site and, using a network of volunteers to copy the record data, post everything but the pictures? And how about we follow the offender's whereabouts on the site. We could have links to each case so that these people could be tracked by public reports.

Now I know that the bleeding-heart response will be along the lines of "but there's a danger that these people will be harassed." Sure, that's a real possibility, but given the recidivism rate, there's a more profound danger to our children. Plus, might I point out, these offenders implicitly surrendered their right to be a member of our society when they attacked our children.

I've got the tentative agreement from an Internet service provider to design and host the Web site. So the question is, do we care enough? If we, the people who know and understand the power of computers and communications, don't make this kind of information available, no one else is going to do it.

Your comments to nwcolumn@gibbs.com or (800) 622-1108, Ext. 7504.



Mark Gibbs



'NET BUZZ

The latest on the Internet/Intranet Industry

By Chris Nerney

HAVING THEIR SAY Last week we roughed up USWeb Corp. ("Smells like a sell-off"), arguing that the Web services start-up was in danger of collapsing under debt accumulated as a result of an aggressive acquisition strategy.

Oddly enough, USWeb executives were unenthused by our analysis. So there we were, girding for verbal battle, thesaurus and Scrabble board in hand, when we get a call from company co-founder and President Toby Corey, who immediately started being *nice* to us. We hate when that happens.

Corey disputed what we wrote about the company's finances and business model and then challenged us to a duel. We declined, but thought it only fair to pass along some of what he had to say.

Regarding the \$72 million debt on USWeb's books, Corey says the figure is misleading because it includes large non-cash charges from its purchase of smaller Internet service providers as part of the company's strategy to build a chain of offices. Formed in December 1995, USWeb already has more than 40 offices, with more acquisitions planned.

Corey says these buyouts are done as stock compensation deals — in which the owners of the acquired businesses get USWeb stock — rather than cash transactions.

"The company has no debt," he says.

The company hasn't had a whole lot of revenue either, though to be fair, that is changing. USWeb revenue jumped from \$1.8 million in 1996 to \$19.3 million last year.

Corey also objects to the theory shared by some — and suggested by us — that the real strategy of USWeb's major shareholders is to drive up stock prices and then sell off, rather than build a solid business for the long haul. (USWeb and some stockholders recently offered more than six million shares to the public at triple the original price.)

"If the company had a short-term mentality, we definitely would be running this business in a different way," Corey says. Most technology companies use the "pooling of interests" transaction method when acquiring other firms, he says. This allows them to restate historical numbers and write off all acquisition costs.

"If we did 'pooling of interest' transactions, we could make our [earnings per share] line look a lot better," Corey says.

He says the company is on target with its 1998 business plan. Meanwhile, Wall Street analysts project that USWeb will become profitable by year-end.

Of course, Wall Street analysts can be wrong. Then again, so can *'Net Buzz*. We look forward to seeing how the USWeb story plays out.

'COULD WE ALSO INTEREST YOU IN OUR FINE LINE OF AMWAY PRODUCTS?' Every once in awhile we like to update you on companies we've written about. It's our little version of "Where Are They Now?"

Well, we'll tell you where FutureNet, Inc. is — in the woodshed, that's where.

Based in Valencia, Calif., FutureNet makes, among other things, a set-top box allowing viewers to access the Internet through their TVs. The company early last year signed a \$25 million financing deal (NW, Jan. 6, 1997, page 46).

FutureNet signed a deal of another kind recently: An agreement to pay \$1 million to settle Federal Trade Commission (FTC) charges that the company engaged in a pyramid scheme. The company is alleged to have tried to sell its products through an Internet-based pyramid scheme.

The company solicits recruits by claiming they can make a lot of money selling Internet access devices and signing up other people to sell, too. FutureNet charged people anywhere from \$200 to almost \$800 each to become distributors.

The FTC alleges that most of the money was being made not by selling products but by signing up other distributors. FutureNet offered its distributors a \$200 to \$400 bounty for each new person they signed up.

Federal officials are still pursuing cases against three FutureNet executives who have not agreed to the settlement. In the meantime, the company operates under a modified temporary restraining order.

'Net Buzz needs your best Internet- and intranet-related news, and you need to send your tax stuff to the IRS by Wednesday. But don't confuse the two; we don't want to spend the next two months cutting checks for every reader due a refund. Contact Chris Nerney at (508) 820-7451 or cnerney@nw.com.



Texas A&M's 43,095 students represent every state and 113 countries.

**Who helped
Texas A&M
build their
high-speed
switched
network?**

Xylan.

Texas A&M is the nation's sixth largest university in terms of student enrollment and first in geographic size. With its main campus network in College Station, along with networks in sister institutions across the state, Texas A&M wanted to unify both its efforts and its network infrastructure in order to provide greater functionality to its students and faculty. "What we needed was a technology that would allow us to upgrade our network incrementally, without having to wait until everything was switched over to receive the benefits," says Willis Marti, senior lecturer and director of computing services in the department of computer science at the University. "We liked the Xylan 'multi-media in a box' solution. We have found that Xylan switches provide an incredible degree of flexibility in integrating and configuring both legacy networks and new technologies."

"We recently made a decision to push the switched Xylan solution all the way to the dorms," adds Dave Hess, director of networking at Texas A&M. "Each student will have his/her own switched port. This gives us the ability to meet evolving higher bandwidth needs, and provides a means for the University to achieve its security goals via the embedded Xylan authentication capabilities. We are setting our strategy around a fully switched solution from this point on."

Switching: LAN, Layer-Three, ATM, Gigabit.
Interfaces: Ethernet, Fast Ethernet, Gigabit Ethernet, ATM, Token Ring, FDDI, Frame Relay, Voice, ISDN.
Services: Firewalls, Authentication, Multicast, Broadcast Management, Protocol Translation, Mobility, QoS, Prioritization, Compression, Policy-Based Management.

**For a full case study:
www.xylan.com/apps
800 995 2612**

 **xylan**
Switched Network Services

CircleReader Service #9



THE ANNOUNCEMENT THAT'S CAUSING
SO MUCH EXCITEMENT YOU'LL WANT
TO KEEP AN EXTRA PAIR HANDY.



The Summit48™ Enterprise Desktop Switch.

We'd like to direct your attention to a new category of switches:
The Summit48™ Enterprise Desktop Switch. Featuring 48 switched
10/100 Ethernet ports and two Gigabit Ethernet ports. Wire-Speed IP
Routing performance at 10.1 million packets per second. With a 17.5-Gbps
non-blocking switch fabric. Policy-Based QoS to the desktop. And when
you see the price per port, exercising self control won't be so easy.


www.extremenetworks.com/nw.htm

800-822-3206 (U.S.)

+1 818-865-2811 (Outside U.S.)